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ABSTRACT

This document is designed to provide an understanding of the major longitudinal issues and problems, a rationale for longitudinal studies, and the advantages and disadvantages of using longitudinal studies for evaluation and accountability purposes when applied to vocational education. Following an introductory chapter, chapter 2 presents a conceptual framework for longitudinal studies. The first section presents an overview of vocational education and develops the need for longitudinal studies of vocational education. The second section summarizes selected past and present longitudinal studies of vocational education. The third section examines basic concepts and issues of vocational education evaluation and accountability and their implications for longitudinal studies. The third chapter presents specifications for longitudinal studies of former vocational education students. Basic strategies and procedures enumerated include research procedure and design, longitudinal study designs, records and opinions, locating subjects and maintaining participation, data management analysis and statistical problems, and administration and management problems. The remainder of the publication includes a glossary, a bibliography, and an annotated bibliography of selected federal, state, and local longitudinal studies. (IRA)

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SPECIFICATIONS FOR LONGITUDINAL STUDIES

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FOREWORD

Evaluation and accountability are two major concerns of educators. A number of national studies and reports published following the enactment of the Vocational Education Act of 1963 have pointed to the need for reliable and valid data to support evaluation and accountability at the local, state, and federal levels. One method of providing this data and information is through longitudinal studies. Yet efforts to use longitudinal studies have been at best minimal. Often problems relating to design, procedure, and cost have been cited as reasons why educators show little interest in longitudinal studies.

The National Center has consistently endorsed and promoted evaluation activities as essential for improving the responsiveness of vocational education for all persons. Recognizing this primary need, a study sponsored by the Bureau of Occupational and Adult Education, under terms of the U.S. Office of Education contract with the National Center for Research in Vocational Education, was undertaken to develop specifications for longitudinal studies of former vocational education students.

This report has two major parts. The first part contains a conceptual framework which highlights major longitudinal studies undertaken and the issues they raise in regard to vocational education evaluation and accountability. The second part contains the specifications for the designing, planning, and conducting of longitudinal studies of former vocational education students.

The specifications were developed with an emphasis on defining specific goals and objectives for vocational education longitudinal studies. Moreover, the specifications are intended to focus on those concerns and issues of state and local education agencies including federal legislative mandates. And with those concerns and issues as a focal point, it is our hope that this document can aid in addressing the critical problems of vocational education evaluation and accountability.

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Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

CHAPTER I

INTRODUCTION

This document is intended to introduce the state and local vocational educator to the complex topic of longitudinal studies. It is primarily directed toward persons responsible for the evaluation of vocational education.

Many terms in research and evaluation mean many things to many people; longitudinal studies are no exception. McDaniel offers one definition which seems to capture this diversity and complexity:

> Longitudinal studies are something like a space shot: they are exceedingly expensive, require exquisite planning and organization, carry a sharply limited payload, and are entered into with fear and trembling on the part of participants. Such considerations have induced an appropriate hesitancy in embarking on longitudinal studies. At the same time, it is evident that the most pressing problems of education are more likely to yield to long-range, programmatic research than to short-term status studies.[1]

Presently, most vocational education personnel believe that evaluation which produces data that can be used for decision making is an immediate need. But the major question is, "what type of evaluation and method(s) will be most cost-effective in producing data?" Certainly the longitudinal method is a viable alternative. However, the reasons stated above have, in part, prevented vocational education personnel from considering longitudinal efforts. The paucity of information in a single source document, along with minimal efforts in using longitudinal methods, have contributed to an awareness and knowledge problem for the vocational education personnel.

Purpose of Publication

This publication addresses the above-mentioned problems. It attempts to synthesize concepts, issues, and practices from the current state of art rather than add significant new information. Pursuant to this aim, an attempt has been made to systematically survey the literature on longitudinal studies, interview leading practitioners in the field, inspect relevant laws and regulations, review exemplary efforts, and discuss evaluation and longitudinal study needs with state and local education agency personnel.

Specifically, it is intended that this document will provide the reader with an understanding of the major longitudinal issues and problems, a rationale for longitudinal studies, and the advantages and disadvantages of using longitudinal studies for evaluation and accountability purposes when applied to the study of vocational education. Moreover, the reader will be in a position to make informed judgments on the relevancy of longitudinal studies to vocational education evaluation and accountability. And the reader will be able to identify and/or develop strategies and procedures for designing, planning, and conducting longitudinal studies of former vocational education students.

Organization of the Document

The second chapter presents a conceptual framework for longitudinal studies. The first section presents an overview of vocational education: review of the legislation, definitions and objectives, complex responsibilities, evaluation and data problems. The culmination of the overview is the development of need for longitudinal studies of vocational education. The second section summarizes selected past and present longitudinal studies of vocational education. Past and present longitudinal efforts with the focus on the studies' purpose, design, and results are highlighted. The third section examines basic concepts and issues of vocational education evaluation and accountability and their implications for longitudinal studies. In addition, attention is given to differences and commonalities between longitudinal studies of secondary vocational education students and postsecondary vocational education students.

Chapter III presents specifications for longitudinal studies of former vocational education students. Building on the concepts defined in Chapter II, basic strategies and procedures are enumerated. These strategies and procedures include: research procedure and design, longitudinal study designs, records and opinions, locating subjects and maintaining participation, data management analysis and statistical problems, and administration and management problems.

The remainder of the publication includes a glossary, a selected bibliography, and an annotated bibliography of selected federal, state, and local longitudinal studies. A section is also provided which references selected longitudinal study instruments for readers' further review and analysis. These examples can provide readers with sufficient information on variables and/or questions for adoption or adaptation to their particular needs, be they state or local vocational educator at either the postsecondary or secondary level.

CHAPTER II

A CONCEPTUAL FRAMEWORK FOR LONGITUDINAL STUDIES

This chapter provides a basis for a technical discussion of longitudinal studies. It presents selected background information on vocational education vital to one's designing and undertaking longitudinal efforts. Longitudinal projects directly and indirectly related to vocational education are examined. Moreover, the focus is on issues and problems in vocational education, with particular attention to evaluation and accountability. Also, critical problems in conducting longitudinal studies are highlighted.

Vocational Education: An Overview

This section is intended to provide a brief overview of vocational education. The overview consists of a discussion on vocational education legislation; the definitional concerns and objectives of vocational education; the discussion of the complex responsibilities confronting vocational education; the paramount evaluation and data problems; and the documentation of the need for longitudinal studies of former vocational education students.

Legislative History

Many factors have affected the development of public vocational education in America. Economic, educational, cultural, religious, and social changes have influenced those responsible for the development of educational legislation.

Public vocational education in America can be traced back to 1646 when the Virginia Colony provided that two children from every county should be taught, at public cost, the arts of carding, knitting, and spinning.[2] Calhoun and Fitch identify five major federal legislative acts passed prior to 1900 that affected the development of education in America.[3] The contents of these acts and the public's response provided the foundation for systematic development of vocational education. The Land Ordinance of 1785 required that developing territories set aside land for the support of education. Encouragement to establish schools and the means for education was found in the Northwest Ordinance of 1787. The Morrill Acts of 1862 and 1890 provided support to establish and maintain agricultural and mechanical arts colleges. Further support for the agriculturally-oriented economy was the Hutch Act of 1887 which provided funds for the development of agricultural experimental stations.

With advent of the 1900s and the rapid development of technology and the expansion of industry, there was an increase in the need for skilled workers. The federal government responded with legislation that focused on the development of workers to meet the human resource needs of the growing economy and expanding industry. The Smith Hughes Act of 1917 was the first one of a series of acts in the early 1900s which focused on meeting the needs of the labor market. This Act provided support for vocational education at the secondary level including support for agriculture, trade and industry, and home economics. More specifically, this Act reflected the conditions of the times:

> concern with opportunities for sons and daughters of working people and farmers, few of whom would go on to college or university, or even finish high school; concern with youth unemployment and urban crimes; concern with industrial and agricultural production superiority of the German Kingdom of Bavaria; concern that academically oriented schools could not respond to the increased demand for trained industrial and technical workers brought about by rapid industrialization; concern that schools, if left to their own, would not respond to the need for education for work.[4]

Other legislation passed in the early and middle 1900s that directly and indirectly focused on vocational education was: the George-Reed Act of 1929, George-Ellzey Act of 1934, George-Deen Act of 1936, George-Barden Act of 1946, Fess-Kenyon Act of 1920, LaFollette-Barden Act of 1943, Serviceman's Readjustment Act of 1944.

With the launching of a man into space in the late 1950s, we witnessed an increasing concern in education for technological advancement. The passage of the National Defense Education Act of 1958 set the stage for emphasis on higher education with some attention to skill training below the baccalaureate degree. In the 1960s we witnessed an unprecedented concern on the part of the federal government toward making a commitment to vocational education—in partnership with state and local governments.

A primary theme in the legislation beginning in the 1960s and into the late 1970s was to redirect the public education process so that career development, and the preparation of individuals for work, becomes as much a part of the goals, objectives, and activities of education as are intellectual development and the preparation of individuals for college. The legislation record for the 1960s and the 1970s impacting on vocational education included the Manpower Development and Training Act of 1962, the Vocational Education Act of 1963, the Vocational Education Amendments of 1968, Elementary and Secondary Act of 1965, the Education Amendments of 1972, the Education Act of 1974, the Education Act of 1976, Comprehensive Employment and Training Act of 1973, and the Youth Employment and Development Program Act of 1977.

These legislative acts showed a change in focus from preparing people to meet jobs to preparing people to satisfy their career and occupational interests. Also, passage of the Vocational Education Act of 1963 and its amendments marked a significant increase in research and development on existing and new programs. Equally important, evaluation and accountability gained increasing importance. The public showed increasing concern that investments in education be evaluated and that those responsible for delivery be accountable.

Definitions and Objectives

Federal legislation defines vocational education as:

> Organized educational programs which are directly related to the preparation of individuals for paid and unpaid employment, or for additional preparation for a career requiring other than a baccalaureate or advanced degree.[5]

This current legislation provides a basis for the development of vocational education objectives which have both commonalities and differences among local, state, and federal persons.

Initial vocational education objectives sought to provide a mechanism for meeting the human resource needs of the local community. While the need for training personnel has been recognized throughout history, the problems for providing such personnel became increasingly difficult as the rate of technology advanced and as the industrial structure changed. While individuals could expect to spend their lifetimes in the same occupations and could expect to transmit to their children the essentially same skills, knowledges, and attitudes which they themselves had learned, the need for institutionalizing vocational education was much less than it is now when few people can expect to engage in exactly the same productive activities for even a year.[6]

With the passage of the Vocational Education Act of 1963 a new focus was established. According to Evans, the 1963 Act "focused on the people who needed skills rather than the occupations which needed people."[7] The 1963 legislation, the 1968 amendments, and the most recent 1976 legislation stipulated that vocational education was to maintain, extend, and improve existing programs. Also develop new programs so that persons of all ages in all communities would have access to high quality training or retraining. Vocational education was charged specifically with meeting the needs of special populations (women, minorities, handicapped, disadvantaged, and limited English proficiency persons), particularly those with difficulties that prevented them from succeeding in regular vocational programs. An overriding theme of the 1976 legislation was to address the role of women in society and equalize opportunities for all special populations.

Many consider the demands of recent vocational education legislation to be unrealistic. Yet viewed in light of its historical evolution, vocational education remains in a sense "a person for all seasons," shaped through the years by the changing economy, societal values, technological advancements, and special interest groups. Although no single definition is entirely apropos, most would agree that vocational education includes all education which makes an individual more competent in one group of occupations than another.

Complex Responsibilities

The complexity stems from the belief that vocational education, primarily from the national level, is seen by many as a critical factor in national human resources development, social, and economic policies. Moreover, complexity is further defined by the fact that vocational education is considered an education program and also an employment training and social program.

The dual responsibility seemingly was attached to vocational education with the passage of the 1963 Vocational Education Act and its subsequent amendments. Emphasis on meeting the nation's employment and training needs and increasing equal opportunity for the special populations (women, disadvantaged, handicapped, and limited English proficiency) received increasing attention. Further, the public became more concerned as the national economy experienced periods of inflation and recession. Accountability for expenditures of federal dollars became a household word during the 1970s. Recent federal legislation reflects increased attention to the accountability issue. The Education for All Handicapped Children Act of 1975 (P.L. 94-142) required unprecedented demands for program design, implementation, and evaluation from the educational community at all levels.

The same thrust toward accountability appeared in Title II of the Education Amendments of 1976 (P.L. 94-482), which requires each state to collect data to determine the degree of program effectiveness. These data must measure the extent to which vocational education program leavers and completers (1) find employment in occupations related to their training, and (2) are considered by their employers to be well trained and prepared for employment. This legislation also required national vocational education effectiveness data. Consequently, the National Institute of Education and the National Center for Educational Statistics were given significant roles in conducting national evaluation studies.*

* (See next page.)

The fundamental reappraisal of many of the theories which supported the remarkable development of vocational education in the 1960s has contributed to a disquieting mood in the present decade. For example, certain commissioned papers from one federally sponsored study of vocational education concluded that vocational programs are operating largely on blind faith and that the relationship between what is taught and earning a livelihood is highly questionable.[8] Based on the contributions of fifty-seven authors of commission papers and consultants, the report of the Work in America task force inspired by HEW Secretary Elliot Richardson in 1972 stated that "vocational education in the high schools had failed to give students useful skills or place them in satisfying jobs."[9] These statements were not, however, given complete endorsements by those principally involved and have been widely challenged.

Despite such claims, few observers would deny that since 1963 vocational programs have taken their place in the educational system as a means of preparing young people for labor market entry and progression, and enabling adults to adjust to changing job requirements. Indeed, many would agree that there is a definite correlation between vocational education and community economic progress. Hopkins substantiates this view:

> Measuring the impact of quality vocational education on economic growth is not a clear-cut task. Some observers would not attribute economic growth to the influence of vocational education. In several states, however, vocational education is considered a strong factor in industrial development. Oklahoma, South Carolina, Alabama, Minnesota, Illinois, and Mississippi are among the states which include vocational education in the consideration of industrial growth. In these states, vocational training and industrial development are closely linked.[10]

In retrospect, it appears that many of the critical changes leveled in the 1970s against vocational education have focused primarily on the lack of existing comprehensive and valid data. As stated in the 1974 report by the General Accounting Office: "Congress has observed repeatedly that information about vocational education is inadequate for the purposes of formulating public policy and ascertaining whether . . . programs are working properly."[11]

Lee also acknowledges the deficiencies of the existing data base, but offers a more optimistic view when he states:

> The data base itself at the national level does serve the purpose of providing a little more information about vocational education than is known of any other segment of education in the schools. Its inadequacies and flaws have been repeatedly pointed out by the National Advisory Council on Vocational Education, by congressional committees, and particularly by the authors of Project Baseline reports over a period of six years. Some improvement has been shown in recent years as far as reliability of the data is concerned but none whatever in the adequacy and utility of the data being collected. In some respects utility has been impaired through almost annual changes in reporting requirements. This has been particularly true of financial data and student characteristics.[12]

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* An effort toward defining and clarifying roles and responsibilities in evaluating vocational education was undertaken by the National Center for Research in Vocational Education. Reports were prepared describing the origins, assumptions, approaches, and problems of the major vocational education evaluation efforts. The reader is referred to this report: Education Commission of the States. *Evaluation of Vocational Education: Roles, Responsibilities, and Response of State and Federal Agencies.* Columbus, Ohio: The Ohio State University, 1979; and William W. Stevenson. *Vocational Education Evaluation: Problems, Alternatives, Recommendations.* Columbus, Ohio: The Ohio State University, 1979.

Evaluation Data Problems

Evaluation is currently considered the most urgent challenge of vocational education. This challenge stems in part from the passage of P.L. 94-482, which prescribes specific evaluation and accountability requirements from state and local education agencies. Many believe that vocational education is poorly prepared at present to meet those requirements for evaluation and accountability. Commonly cited, not only for vocational education but also for all of education, is the belief that trained personnel, methodology, instruments, and experience are lacking.

Datta's perspective of vocational education evaluation is based upon the framework of the 1976 Vocational Education Amendments. In her analysis of the federal role in vocational education, she focuses on two themes:

1. That evaluation requirements reflect the congressional belief that the executive branch, state and local agencies need prodding to keep up with the times and to respond to the needs of diverse groups;
2. That the greatest problems for implementing vocational education evaluation requirements arise from limitations in the state of the art, while the greatest reason for expecting that the new requirements will be met in that achieving these also holds promise for meeting the common education interests of federal, state, and local agencies.[13]

Need for Longitudinal Studies

The requirement for comprehensive national data and documentation over a long period of time indicates the need for longitudinal study of vocational education students. In detailed review of research studies in vocational education and technical education in 1970, Little pointed out that there was a "vacuum" of information which ought to be filled: "One important need is a comprehensive longitudinal study of the in-school and post-school careers of cohorts of persons who move through the educational system along different paths."[14]

Since 1970 several efforts have addressed, in part, the need to longitudinally evaluate education program effectiveness in preparing youth to enter and progress in the labor market. Conroy, in addressing the criticism of secondary vocational education, recommends that Congress mandate better longitudinal information about the effects of vocational education at the secondary level.[15] Further support is offered by Bottoms, who recommends several approaches that vocational educators can take in demonstrating the effectiveness of their programs. One approach that he suggests is longitudinal studies charting the career progression patterns of vocational and nonvocational graduates.[16] However, design limitations and resource shortcomings coupled with much more current emphasis as dictated by P.L. 94-482 prevented these efforts from providing the detail or focus on variables which contemporary vocational educators consider important for program improvement and evaluation.*

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* For further discussion of these and similar issues, see Robert L. Darcy. *Vocational Education Outcomes: Perspective for Evaluation.* Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1979; and Floyd L. McKinney and Beth Harvey, eds. *Viewpoints on Interpreting Out-Come Measures in Vocational Education.* Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1978.

Past and Present Longitudinal Studies

Although there has been a clear need for longitudinal studies, their use in education—and in particular vocational education—has been quite limited. One of the earliest longitudinal studies in education began in the 1920s with Terman's work with gifted children.

Longitudinal studies relevant to vocational education were not conducted until recently. In 1979 Pucel found only eighteen studies "which apparently used longitudinal methods that would have relevance to education problems faced by vocational education."[17] However, a number of these studies suffered several kinds of limitations. Nine of the most important longitudinal studies are discussed in the following narrative. Further, the reader is encouraged to review the selected longitudinal studies in the annotated bibliography section. These selections are divided according to their representing the local, state, or national populations. Studies focusing on vocational education or related areas are included.

Project TALENT

Perhaps the most recognized longitudinal study in education is Project TALENT. Many subsequent longitudinal studies of youth follow patterns established in this effort.

Project TALENT is an ongoing educational research study which is both longitudinal and cross-sectional in its methodology and implications. It is longitudinal because tested subjects are followed up periodically; and it is cross-sectional in that the longitudinal data are available for four successive grade groups—twelve, eleven, ten, and nine.[18] This effort initiated in 1957 has developed an extensive data base on the characteristics in high school and the subsequent educational, career, and personal experiences of a national probability sample of approximately 400,000 individuals who were in high school in 1960. Specific goals developed for this study include:

1. To obtain a national inventory of human resources.
2. To develop a set of standards for education and psychological measurements.
3. To provide a comprehensive counseling guide indicating the patterns of aptitude and ability which are predictive of success and satisfaction in various careers.
4. To formulate a better understanding of how young people choose and develop in their worklife.
5. To identify the educational and life experiences which better prepare students for their worklife.[19]

Many studies have been conducted and many publications have been produced since the initial data collection.* Project TALENT publications contain valuable information for those undertaking longitudinal efforts or planning to improve existing efforts. These publications provide information, such as methods for data analysis, techniques for maintaining samples, procedures for collecting data from noncooperative individuals, and procedures in adjusting for missing data. Also, Project TALENT has made available at cost a *Public Use File* for exploratory and small-scale analyses. Numerous studies have been conducted and are documented in the bibliography cited earlier.

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* For a comprehensive review of efforts past, present, and future, the reader is encouraged to review the following documents: Emily A. Campbell, *Publications Based on Project TALENT Data: An Annotated Bibliography* (Palo Alto, California: American Institute for Research, January 1979). Lauri Steel and Lauress L. Wise, *Designing A Study of Adult Accomplishment and Life Quality: A Report on Phase I of the Project TALENT 17-year Follow-up Survey and TALENT Data Bank Maintenance Activities* (Palo Alto, California: American Institute for Research, November 1977).

National Longitudinal Survey of Labor Market Experience (NLS)

The Center for Human Resource Research, The Ohio State University, has been conducting study of labor market behavior since 1965. This longitudinal study sponsored by the U.S. Department of Labor has examined the labor market experience of four groups: men 45 to 59 years of age, women 30 to 44 years of age, and young men and women 14 to 24 years of age. Each cohort initially consisted of 5,000 persons and was a national probability sample. Another phase of this effort began on January 1, 1979, the development of a new cohort of female and male youth between the ages of 14 and 21, with over-representation of blacks, Hispanics, and poor whites.

The primary goal of the National Longitudinal Surveys has been to analyze sources of variation in labor market behavior, with emphasis on policy-relevant research issues to serve the needs of program and policy makers. The specific objectives for the new youth study are:

1. To examine various types of public programs designed to improve the labor market position of youth;
2. To explore in greater depth than has hitherto been possible the complexity of economic, social, and psychological factors responsible for variation in the labor market experience for youth;
3. To analyze the impact of changing socioeconomic environment on the educational and labor market experiences of youth by comparing data from the present study with those yielded by surveys of earlier NLS cohorts of young men (1966) and young women (1968).[20]

The labor market surveys of these national probability samples of individuals have collected a wealth of data applicable to vocational education. These data bases include variables, such as labor market status, wages, work experience since previous survey, high school curriculum, job attitudes, socioeconomic background, and other data. These results have been reported and appear in the literature.* Public use data tapes are available at cost to the public along with supporting documents for exploratory research.

Continuous Longitudinal Manpower Survey (CLMS)

This effort began in 1974 under the direction of the Office of Program Evaluation of the U.S. Department's Employment and Training Administration and is a study of national samples of program participants conducted through local governments under the Comprehensive Employment and Training Act (CETA). It was planned as a long-term evaluation effort in the decade from 1975 to 1985.

This survey was designed around three objectives: (1) to determine who is served by the CETA employment and training programs, (2) to determine if those served improve their employment and earnings, and if so, by how much, and (3) to determine the amount of gains in employment and earnings that are attributable to the programs.[21]

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* For further review and description of these results the reader is referred to: Center for Human Resource Research, *The National Longitudinal Surveys Handbook* rev. ed. (Columbus, Ohio, The Ohio State University, January 1979).

National Longitudinal Study of the High School Classes of 1972 and 1980

After three years of planning by the National Center for Education Statistics (NCES), the National Longitudinal Study of the High School Class of 1972 was initiated in the spring of 1972.[20] Nearly 20,000 high school seniors participated in the base-year survey. More seniors were included in follow-up surveys providing information on activities since completing high school and their plans regarding education, training, and jobs. More similar follow-up surveys are planned. Resultant data will facilitate the identification of major branching or decision points that affect educational and life patterns in the immediate postsecondary period. Numerous studies and reports are available for review.* Data tapes from this study are available to other researchers.

A second phase of this longitudinal study began in 1979. This phase entitled "High School and Beyond, a National Longitudinal Study for the 1980s" will study the transition years as high school students leave the secondary school system to begin postsecondary education, work, and family formation. The study is designed to obtain base-year data on a sample of high school seniors and another sample of high school sophomores. These cohorts will then be followed up to two-year intervals. The addition of the sophomore sample in 1980 is seen as providing more depth to current understanding of student development and the effects of high school education. Also, attention will be given to securing information on the student dropping out of high school problem.

Youth in Transition

The Youth in Transition project conducted by the Survey Research Center, Institute for Social Research at the University of Michigan, began with a national sample of about twenty-two hundred tenth-grade males in the public high schools in the fall of 1966.[22] The study data includes follow-up information from interviews and mailed questionnaires for the end of the eleventh and the twelfth grades, and for the first and the fifth years following the high school graduation of the class. To date, Youth in Transition data have been used primarily by the project staff. Specific use by and for vocational education has been minimal, because of the nature and design of the study. However, recent discussions with certain project staff members indicate the possibility of the further examination of data with implications for vocational education.**

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* For review and analysis of these reports, the reader is encouraged to review the following publication: Samuel S. Peng, Ekicille E. Stafford, and Robin J. Talbert, ***National Longitudinal Studies: Review and Annotation of Study Reports*** (Research Triangle Park, North Carolina: Research Triangle Institute, May 1977).

** For further discussions of the study design and results, the reader is encouraged to review the following six monographs available from the Institute for Social Research, The University of Michigan:

Volume I:	Blueprint for a Longitudinal Study of Adolescent Boys
Volume II:	The Impact of Family Background and Intelligence on Tenth-Grade Boys
Volume III:	Dropping Out: Problem or Symptom
Volume IV:	Evolution of a Strategy for Longitudinal Analysis of Survey Panel Data
Volume V:	Young Men and Military Service
Volume VI:	Adolescence to Adulthood—Change and Stability in the Lives of Young Men

Statewide Longitudinal Study:
California Community Colleges

This effort began with a proposed three-year longitudinal study of a representative sample of all students admitted to Los Angeles Pierce College during the academic year 1977–1978. The longitudinal study goals were:

1. To provide detailed information about pertinent aspects of the student bodies of California Community Colleges;
2. To provide information about the effects of college programs on the lives of the students;
3. To provide further information on the efficiency of small sampling in completing a useful and meaningful longitudinal study;
4. To provide information about the feasibility of using a small-sample, longitudinal study for supplying data to state and federal agencies valid for reporting purposes and for providing individual community colleges with a model to use in answering questions of a local nature;
5. To provide information on the factors within certain vocational programs that inhibit limited English-speaking and non-English-speaking (LES/NES) students from enrolling;
6. To provide assistance in identifying needed curriculum and services for vocational education programs for disadvantaged and/or handicapped students, displaced homemakers, single heads of household, homemakers working part-time or for students enrolled in majors which are nontraditional for their sex.

As a result of this initial effort, a longitudinal project was undertaken involving fifteen California community college campuses. A report of the academic year 1978–1979 is available describing in detail the project objectives, methods, and results.*

Texas Student Information System (Tex-SIS)

The Texas Student Information System is a comprehensive data-based student follow-up information system designed for the community junior college. This system has longitudinal study components. The development of this system began in 1974 as Project FOLLOWUP conducted at the Tarrant County Junior College, Fort Worth, Texas. The purpose of the project was to develop, test, and validate a management information system for the follow-up of students who entered Texas community junior colleges. This effort resulted in the development of questionnaire, computer programs, and procedures for local campuses to conduct follow-up surveys of various student populations. Seven subsystems were developed with fourteen questionnaires designed for academic and occupational/technical students. The seven subsystems are:

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* For further information, the reader is encouraged to review the following documents pertaining to the Statewide Longitudinal Study: Russell Hunter and M. Stephen Sheldon, *Statewide Longitudinal Study: Report on Academic Year 1978–1979, Part I – Fall Result* (Los Angeles, California: Los Angeles Pierce College, 1979); M. Stephen Sheldon and Russell Hunter, *Pierce College Longitudinal Study* (Los Angeles, California: Los Angeles Pierce College, 1978); Ben Gold, *Student Accountability Model* (Sacramento, California: Chancellor's Office, California Community Colleges, 1978).

Subsystem I: Student's Educational Intent (SEI)

Subsystem II: Withdrawal Follow-up: (1) course withdrawal, (2) college withdrawal, (3) walk-off

Subsystem III: Nonreturning Student Follow-up: (1) nonreturning student, (2) occupational/technical nonreturning student

Subsystem IV: Graduate Follow-up: (1) first-year graduate, (2) third-year graduate, (3) fifth-year graduate

Subsystem V: Employer Follow-up

Subsystem VI: Adult and Continuing Education: (1) preparatory, (2) supplemental, (3) other

Subsystem VII: State Follow-up Reporting

The widespread use of Tex-SIS has resulted in at least one of the Tex-SIS questionnaires being in use in all of the forty-nine involved Texas colleges. The reader is referred to the appendix which contains the follow-up instruments.

The most recent addition to the system has been the development of an eighth subsystem—Devault VIII. This subsystem consists of six questionnaires which can be used by participating colleges to generate data for local use and for meeting the federally mandated Vocational Education Data System (VEDS) student and employer follow-up requirements.

Certain Tex-SIS users have undertaken the design and conduct of longitudinal efforts. The results of these efforts are available from the project directors.*

Pennsylvania Vocational Development Study (VDS)

In 1968 researchers at the Pennsylvania State University began collecting longitudinal data on large samples of high school students in three medium-sized cities in that state.[22] This study undertook to follow up the total ninth-grade classes for a period of ten years. A wide variety of data, including psychological tests and other developmental data, were collected from the samples. Later, school and employment data were collected in the follow-up surveys. Over twenty research reports were prepared and disseminated which analyzed the data to determine school and employment success, career choice paths, and other concerns. An important feature of this longitudinal study was that, from the outset, it served to provide evidence for (1) implications for curriculum evaluation and planning, and (2) implications for vocational guidance. These central focuses and the thoroughness of this study serve as a model for others in vocational education. Many of the strategies and techniques used in this study are referenced in Chapter III of this report.

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* For further information in regard to these efforts, the reader is encouraged to contact: Dr. Jim Reed, Executive Director, or Ms. Toni Hall, Associate Director, Tex-SIS Support Services, Navarro College, P.O. Box 1170, Corsicana, Texas 75110.

Project MINI-SCORE

A statewide study over a period of six years, from 1965 to 1971, was conducted in Minnesota to determine potential counseling aids for postsecondary vocational students.[23] An initial data base included biographical and test information of approximately 15,000 students who applied for admission to the Minnesota area vocational-technical schools. The population of Minnesota post-high school area vocational-technical students included in these analyses represented nine groups. Six of the groups represented the total Project population, the total population of females, and the total population of males.

Multiple and zero-order correlation analyses were performed on the data from each population, taking scores obtained from students upon application to the schools and correlating them with each of eleven different criteria of vocational student success. The following instruments were used: (1) General Aptitude Test Battery (GATB), (2) Minnesota Vocational Interest Inventory (MVII), (3) Sixteen Personality Factor Questionnaires (16PF), (4) The Minnesota Importance Questionnaire (MIQ), (5) The Vocational Development Inventory (VDI), (6) Minnesota Scholastic Aptitude Test (MSAT), and (7) personal data sheet.

Eleven criteria of vocational students' success were included: (1) graduation versus dropping out of the program, (2) being employed in a job related to training versus being unemployed or being employed in a job unrelated to training one year after graduation, (3) being employed in a job related to training one year after graduation versus dropping out of the program, (4-6) job satisfaction as measured by the three scales of the Minnesota Satisfaction Questionnaire (MSQ) (intrinsic, extrinsic, and general satisfaction), (7-11) job satisfactoriness as measured by the five scales of the Minnesota Satisfactoriness Questionnaire (promotability, personal adjustment, conformance, dependability, and general satisfactoriness).

Over 17,000 complete sets of data were obtained using the test battery employed in Project MINI-SCORE. This data base constitutes one of the most unique information resources of its kind because all students tested were applicants to the Area Vocational-Technical Schools of Minnesota. There are other data bases, but few are unique in the sense that they are composed of all vocational school-bound students. Enormous amounts of data were gathered and every single element has been translated into information usable by counselors and students for decision-making purposes. The numerous profiles built from these data provided excellent counseling aids for a broad range of students and occupations.

In summary, longitudinal studies with particular relevance to vocational education were few in number. Five national longitudinal studies, none of which focus directly on vocational education, were highlighted; and four state-level longitudinal studies have been identified and briefly noted. Although these nine studies suffered some methodological problems, they have also demonstrated many solutions, and they can be considered as the better exemplars. The following section focuses on a number of those problems within the context of evaluation and accountability issues.

Vocational Education Evaluation and Accountability Issues

Vocational education is a complex, evolving program. Unlike physics or philosophy, it is not an academic discipline, but a discipline in an attempt to prepare individuals for employment. It follows that the evaluation of vocational education—for policy makers and for accountability purposes—is also a complex dynamic process.

The viability of information obtained from longitudinal studies of vocational education programs is contingent upon the quality of questions initially formulated as well as the quality of data obtained over a time period to answer these questions. The evaluation of vocational education programs can be based on three factors: the present status, desired goals, and requirements for implementing these goals. Although some differences of opinion regarding these factors may stem from divergent philosophical and value orientations, many of these differences are the result of inadequate and inappropriate information to begin with.*

This section addresses some of the more pervasive issues related to evaluation and accountability of vocational education.

Legislative Mandates

Responding to social, economic, and political forces, the most recent vocational education authorizing legislation—the Educational Amendments of 1976, Title II—provides a ready source of evaluation and accountability topics that may be addressed in the conduct of a carefully designed national longitudinal study.

The Education Amendments of 1976 (P.L. 94-482)—Title II—Vocational Education, Section 112(b) state:

1. In order for the states to assist local educational agencies and other recipients of funds in operating the best possible programs of vocational education,

   a. Each state shall, during the five-year period of the state plan, evaluate the effectiveness of each program within the state being assisted with funds available under this act; and the results of these evaluations shall be used to revise the state's programs, and shall be made readily available to the state advisory council;

   b. Each state shall evaluate, by using data collected, wherever possible, by statistically valid sampling techniques, each such program within the state which purports to impart entry-level job skills according to the extent to which program completers and learners—

   i. find employment in occupations related to their training;

   ii. are considered by their employers to be well trained and prepared for employment, except in no case can pursuit of additional education or training be considered negatively in these evaluations.

2. Each state, in formulating its plans to fulfill these requirements, shall annually consult with the state advisory council which shall assist the state in developing these plans, monitor the evaluations conducted by the state, and use the results of these evaluations in compiling its annual report required by Section 105.

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* Considerable debate has occurred in recent years of certain factors to be included in the evaluation and accountability of vocational education. The 1976 Vocational Education Act has contributed significantly to that debate. Specifically, the concern over "outcomes" of vocational education has become a household word in many sectors. For a more detailed analysis of these debates and concerns, the reader is encouraged to review the following reports: R. L. Darcy, *Vocational Education Outcomes: Perspective for Evaluation* (Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1979); J. Farley, *Vocational Education Outcomes: A Thesaurus of Outcome Questions* (Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1979); F. L. McKinney, K. E. Gray, and M. Abram, *Interpreting Outcome Measures in Vocational Education: A Final Report* (Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1978).

In order to comply with minimum requirements established in this legislation, evaluations for vocational education programs must present data answering the following questions: (1) How many students found employment related to their training? (2) How many of these students are considered to be well trained and prepared for employment as rated by their employers? It follows that former student and employer surveys are needed.

Section 171(b) of P.L. 94-482 requires research and development and curriculum development projects to demonstrate a reasonable probability that they will result in improved teaching techniques or in curriculum materials which will be used in a substantial number of classrooms within five years. One way to respond to this legislative mandate would be to collect data on such programs and their impact over an extended period of time.

Another legislative mandate, Section 161 (P.L. 94-482), requiring cooperative efforts with those agencies conducting mandated vocational program effectiveness studies, implies the need for comprehensive and extended national data collection activities. Collaborative arrangements with the Vocational Education Data System can encourage data interchange efforts with those agencies.

A more explicit mandate, Section 523(b) (P.L. 94-482), directs the National Institute of Education to undertake a thorough evaluation and study of vocational education programs, including those conducted under the Comprehensive Employment and Training Act (CETA) and other legislation. The act mandated that the effort include:

1. A study of the distribution of vocational education funds in terms of services, occupations, target populations, enrollments, and educational and governmental levels and what such distribution should be in order to meet the greatest human resources needs for the next ten years;
2. An examination of how to achieve compliance with, and enforcement of, the provisions of applicable laws of the United States;
3. An analysis of the means of assessing program quality and effectiveness;
4. A review and evaluation of programs funded under the "Consumer and Homemaking Education" provisions of the law.

Special Populations

The issue of providing vocational education evaluation data on special populations could have been included in the preceding section, but is important enough to warrant a separate section of its own.

Since the early 1970s several public laws that were formulated on behalf of special populations have had a direct impact on vocational education. Title IX of the Education Amendments of 1972, Title VI of the Civil Rights Act of 1964, and Section 504 of the Rehabilitation Act of 1973 have resulted in the issuance of regulations prohibiting discrimination in educational programs on the basis of sex, race, national origin, or handicap. The Education for All Handicapped Children Act of 1975 has had considerable impact on vocational education delivery systems. Finally, P.L. 94-482 specifically mentions special populations in its various sections and prescribes funding ratios for the delivery of vocational education to such populations.

Six broad issues raised by the aforementioned public laws are important to vocational education program designers, administrators, and evaluators. Moreover, the issues have a need for studies which focus on long-term effects. These issues are:

1. A central concern of special populations is the elimination of discriminatory practices in the review, section, and evaluation of students as well as in funding patterns, location, and accessibility of the program's teachers, with the use of selected counseling and instructional materials
2. Equalization of opportunity to participate in and benefit from all aspects of vocational education
3. For special groups that have been housed historically in separate facilities (for example, the handicapped), the delivery of programs and services in a mainstream, integrated environment
4. Facilitating direct client, advocate, and parent involvement in individual programming, as well as program policy decisions
5. Strategies for collaboration and coordination of supportive services with the numerous assistance agencies
6. Addressing the issue of employability for special population groups

A longitudinal study of vocational education completers and leavers can help answer several long-range policy-oriented questions regarding special populations in vocational education. Sample questions include: What are the long-term effects (five to twenty years) of vocational education programs on various types of special populations such as women, limited English-speaking, handicapped, disadvantaged, displaced homemaker, mid-career change, and the incarcerated? What are the occupational aspirations of special population vocational education learners? What are the occupational experiences of these same learners? What special supportive systems are required to place these populations effectively in paid or unpaid work situations? What is the impact of vocational education programs for special needs learners in terms of community and economic development?

It should be noted that there is no one clear, singular definition of special populations. Although special populations are narrowly defined in some sections of federal legislation, other sections use a loose definition or no definition at all. Current emphasis is on women, minorities, handicapped and disadvantaged, and limited English-speaking learners. However, it is likely that this emphasis will shift in response to social, economic, political, and technological changes. For example, given the current population growth patterns, it is reasonable to anticipate that future vocational education may concentrate more language and regulations on the delivery of programs to elderly and retired individuals. Although it is not possible to forecast the future, the astute researcher should keep such thoughts in mind when designing a longitudinal study and seriously attempt to be prepared for upcoming redirections in congressional acts.

Two major purposes for the inclusion of special needs populations in vocational education longitudinal studies seem evident. The first purpose is the establishment of a data base for developing, refining, and/or documenting federal education policy regarding vocational education for special populations. The increase in federal legislation, regulations, and guidelines related to special groups has created numerous changes in the funding, structuring, and operation of vocational education. Informed policy decisions by Congress and federal officials require valid and reliable data. A mechanism for monitoring these changes in relationship to their impact upon students, programs, and the labor market is needed.

A second major purpose is to monitor the career development patterns of special populations. Few studies have tracked changes that occur during a special learner's transition from school to young adulthood and beyond, following exposure to organized vocational education. The vocational education community needs additional tested strategies for teaching, counseling, and support systems for special needs students in vocational programs. If sufficient data can be obtained describing the special learners' needs, programs, support services provided, and postprogram experiences for special learners, valuable information will be added to the field's knowledge base.*

Education of Future Workers

The education of future workers will undoubtedly continue to involve many agencies, organizations, and institutions just as it has in the past. However, the role of the public, as expressed through legislation, should be answered deliberately. Assuming that human resource requirements are known, there are many questions which should be asked about the education of future workers:

1. What should be the role of public high schools in preparing future workers? Should the high schools provide instruction solely for entrance into jobs which require less than a baccalaureate degree? Should the role be primarily the preparation of persons who must complete baccalaureate degrees of higher levels of education for job entrance?
2. Should education for workers be carried out through both nonformal and formal education programs? Are there some occupations for which nonformal education is the most cost-effective method?
3. Should existing organizations, agencies, and institutions be utilized to educate future workers? Should new agencies be created? Should the roles of various organizations, agencies, and institutions be prescribed by legislation, self-determined, or a combination of the two?

A central purpose of education of future workers rests on the belief that education is necessary as a prior condition for employment. Unfortunately, too often the assumption follows that formal education of youth is the only way or the best way to prepare future workers. It seems apparent that longitudinal studies of youth, including those who have received vocational training in a school setting and those who have not had such vocational education, can provide much useful data in attempting to answer the above questions.

Education of the Unemployed

In our society work is so often associated with personal worth and social status that being unemployed may trigger a cycle which causes loss of self-esteem, frustration, and other negative behaviors. Getting a job and keeping a job, one which provides a reasonable level of satisfaction, is a critical part of an individual's life.

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* Twenty experienced vocational education evaluators, when asked to rate the difficulty of major problems in evaluating special populations, ranked "conducting longitudinal follow-up of special populations" as the most difficult problem facing their respective agencies. Source: William W. Stevenson, "Vocational Education Evaluation Workshop: Resolving Major Problems in Evaluating Vocational Education Programs." A workshop conducted by the National Academy for Vocational Education, National Center for Research in Vocational Education, Atlanta, Georgia, January 16-17, 1980.

It would seem that education applies where there are "people seeking jobs and jobs seeking people." But education of the unemployed is only part of the problem. Many unemployed persons already have much schooling. Some unemployed persons have never been employed and some have become jobless after many years of success in work. Longitudinal studies of persons who have received education for work may offer some useful information. However, if such studies are limited to populations which completed vocational programs in secondary schools, the value of those studies will be very limited for the development of policies related to education of the unemployed.

Some critical questions which need to be asked prior to the specification of data bases to form a longitudinal study especially related to education of the unemployed are:

1. What agencies, organizations, and institutions now are addressing the problems of the unemployed?
2. What forms of education have been used with success with what unemployed groups for what kinds of jobs? How effective were these various forms?
3. What are the barriers to employment? Which barriers (e.g., bias, stereotyping, lack of basics, no experience, etc.) are most likely to be removed by additional education?

Occupational Supply and Demand

Vocational education legislation since 1963 has focused on people rather than occupations, with emphasis on preparing persons for entry into positions normally requiring successful completion of school. In other words, youth enrolled in self-selected vocational education programs at the secondary level were expected to enter occupations normally open to high school graduates, while adults were usually enrolled in retraining programs in their area of interest.

Current vocational education legislation provides a somewhat different kind of thinking about education for occupations. The thrust in recent legislation is to prepare workers for new and emerging occupations. Further, in response to crowded, popular courses such as cosmetology and auto mechanics with, perhaps, poor placement records, there is interest in performing better match-ups between occupations with openings and the interests, skills, and attitudes of young workers. An example in support of this new position was the creation of the National Occupational Information Coordinating Committee and the State Occupational Information Coordinating Committees.

Questions about which occupations and occupational mobility may be answered with longitudinal study data. Such questions include:

1. What are the occupational ladders or lattices, if any, which appear to be patterns for youth who enter and advance in the world of work? Are these patterns the same for the various subpopulations such as females, minorities, etc.? Are the patterns more prevalent for some occupations than others? If yes, which ones? Are these patterns related to geographic regions?
2. Are there historical or traditional differences in the patterns for entry into some occupations such as farming as compared to retailing? Should there be policies or programs to reflect these historical patterns if they do exist?
3. Are the patterns for entry and advancement in various occupations associated more or less with: (a) newer and emerging occupations rather than older occupations, (b) occupations found in large businesses rather than small business, (c) apprentice-type occupations rather than nonapprentice-type occupations, and (d) the ups and downs of the job market rather than the nature of the occupation?

TABLE 1

BASIC LONGITUDINAL STUDENT AND PROGRAM DATA*

INPUT		PROGRAM PROGRESS		OUTPUT		
Biographical	Enrollment	Student Progress	Program Characteristics	Termination	Initial Placement	Follow-Up
.Identification .History .Categorical .Instructional readiness .Etc.	.Program acceptance .Program in which enrolled .Program starting date .Etc.	.Grades .Competency attainment .Progress in special needs activities (if any) .Attendance .Behavior problems .Etc.	.Professional resources .Capital expenditures .Supplies allocated .Curriculum style .Instructional activities and materials .Special needs resources .Administrative style .Program content .Etc.	.Graduation .Withdrawal .Completed training objective .Etc.	.Placement rate .Relatedness of placement .Time between graduation and placement .Etc.	.Employment history since leaving program .Current employment status .Judgments of training program based on job experience .Employer evaluation of performance .Etc.

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* Source: D. J. Pucel, *Longitudinal Methods as a Tool for Evaluating Vocational Education* (Information Series No. 155) (Columbus, Ohio: The National Center for Research in Vocational Education, The Ohio State University, 1979), p. 13.

Longitudinal Data Elements

Vocational education is a multifaceted and complex program. Data necessary to answer vocational education and accountability questions, such as those proposed above, equally are multifaceted and complex. The evaluator designing a longitudinal study in vocational education must strike a delicate balance. A balance among obtaining data to respond to legislative mandates, to answer policy-oriented questions, to assess program effectiveness, and still not ask for so much data as to jeopardize the validity of the results.

Vocational education is education for work. The basic purpose of vocational education is to provide programs which impart to the student work-related skills and attitudes for entry level jobs. To assess the impact of vocational education programs' effectiveness data are needed on students' characteristics, their skills, programs provided, jobs obtained, and successes on the job as viewed by the employers. Studies of the simple relationships and interrelationships of these topical areas are possible once the data are obtained. What programs develop which students and how well they perform on the job are the types of items which might be answered with data collected over a long period of time on the same individuals. Longitudinal studies in vocational education can provide such data.

Pucel provides a comprehensive framework for essential data elements in longitudinal studies of vocational education programs. Table 1—Basic Longitudinal Student Program Data—represents this framework.[24]

The three major categories of longitudinal study data in Table 1 are (1) input, (2) program progress, and (3) output. The input category includes both biographical and enrollment data. The program progress category includes data about students' progress (grades, attendance, competencies, etc.) and program characteristics (professional resources, supplies, expenditures, curriculum). The output category charts termination, initial placement, and follow-up data gathered on program leavers and completers. The follow-up data includes employment history and current status, judgments of training based on job experiences, and employer evaluation of performance.

Problems in Conducting Longitudinal Studies

Conducting longitudinal studies in educational settings presents a number of problems. Additional problems are encountered when the area of investigation is vocational education. This section presents some of the most important problems encountered when conducting longitudinal studies. These problems are presented in no priority or rank order—they are all equally important.

Causality

A major problem in conducting longitudinal studies is the difficulty in assigning causality to the variables under study. Random assignment of subjects to educational programs (the treatments) is virtually impossible on ethical grounds. The difficulty of random assignment of subjects makes inferences about causality quite difficult. Although such fine controls are a regular aspect of conducting many scientific laboratory experiments in order to establish causal treatment effects, they are not a part of longitudinal studies. Most of the controls in longitudinal studies are of the statistical type applied after the behavior has occurred.

According to Marcus, Keesling, Rose, and Trent, before a researcher can infer that one variable caused another, "it must be established that: (a) the variables concomitantly vary with one another; (b) the dependent variable does not precede the independent variable in temporal sequence; and (c) the observed relationship is not spurious or due to other factors which are temporally antecedent to both independent and dependent variables."[25]

The first requirement thus involves selecting appropriate statistical tests to measure the strength of the covariation between two or more variables. Determining the temporal sequence of the independent and dependent variables is partially accomplished by the longitudinal analysis of data. However, sometimes it is difficult to determine the exact order of precedence for two related variables. Marcus et al. offer several techniques for determining the most likely direction of causality: (a) involve a third variable in the conceptual model, (b) ask respondents to clarify or elaborate on the time sequence of the variables, (c) consult outside information sources for data about the temporal sequence of the variables, and (d) perform a cross-lagged panel correlation.[26] The researcher must statistically control for those antecedent variables which could produce such spurious relationships.[27] Anticipation is the key to resolving causality problems in longitudinal research. The investigator must anticipate the problems before the instruments are developed. Such careful pre-planning will permit the investigator to collect the type of information from respondents to explain causality fully.

Attrition

All longitudinal studies are subject to the problem of attrition regardless of the research design used. St. Pierre and Proper identify three types of attrition: policy, sample, and program. Policy attrition occurs when an individual is administratively removed from a study. For example, a vocational school student may be removed from a training program at the decision of school administrators. Sample attrition occurs when units are dropped from the analysis by the researcher for methodological reasons such as incomplete data, suspect data, or insufficient frequencies to complete all cells of the planned design. Program attrition corresponds with the usual meaning of the term attrition. Here we are concerned with the loss of cohort participants due to mobility, illness, death, incarceration, etc. The researchers must therefore attempt to prevent program attrition to subjective decisions and to rely on methodological means to estimate the effects of program attrition.

The validity of a longitudinal study is threatened when nonobservation or nonresponse to a questionnaire is systematic. Systematic nonresponse occurs when particular cohorts of a sample have significantly lower rates of participation than others and the nonresponse is associated with the independent or dependent variable.

Marcus et al. compared differences between respondents and nonrespondents in the Project TALENT study.[28] Students whose fathers held professional jobs were more likely to be respondents while students whose fathers were laborers were likely to be nonrespondents. Thus, as the education level of Project TALENT parents increased, so too did the questionnaire responses. Also, there was greater mobility found among the nonrespondents in the Project TALENT sample. Finally, there was a slight tendency for regularity in school attendance to be positively related with questionnaire responses.

Attrition due to questionnaire nonresponse can be dealt with at two levels: before and after data collection. The following strategies to reduce questionnaire nonresponse (or increase response rates, if you prefer) are numerous and detailed in the literature:

1. Gain the endorsements of others who are respected by study participants.
2. Include incentives with questionnaires (e.g., key chains, pocket calendars, money).
3. Print the questionnaires on colored paepr.
4. Pilot-test the instrument.
5. Include a prestamped, preaddressed return envelope.
6. Carefully schedule instrument administration.
7. Publicize the study.
8. Mail reminder postcards to nonrespondents.
9. Make personal appeals to participants (e.g., birthday cards, etc.).

There are several techniques for adjusting for questionnaire nonresponses, although they should be applied carefully. A curve estimating the probable responses of nonrespondents based on callback data may be mathematically derived. A second technique is to weight subsamples according to their responses. For questionnaires that are returned with some items not responded to, it is possible to insert the arithmetic mean of those respondents in the cohort who did answer the item. Incorrect weighting and substituting techniques may, however, introduce a new kind of bias into the study.

Instrumentation

Instrumentation is another major consideration in conducting longitudinal studies of educational programs. As discussed by Campbell and Stanley, faulty instrumentation can threaten the internal validity of an experiment.[29] Additional problems of instrumentation are examined in this subsection.

Longitudinal studies of education programs demand a special kind of commitment to the research design and instruments utilized. Indeed, some theorists contend that the same exact questions must be asked at each successive measurement point in a longitudinal study. Although there is not universal agreement on this issue, it is generally understood that the researcher must continue to collect data on the independent and dependent variables selected to fit the conceptual framework of the research design.

Another aspect of the instrumentation problem is that the response referent to a questionnaire may change during the time frame of the study. Societal or economic changes may influence the response referent as much as the participant's attitudes or values. Examples in the area of attitudes toward political and social issues are illustrative.

A questionnaire designed for a longitudinal study could become another problem. If not well designed and thoroughly field-tested and revised, the questionnaire could prove to be a stimulus for real or imagined behavior change on the part of the respondent. Heavily loaded negative questions are the best examples of this problem. But there are others. For instance, frequent repetition of the same question may influence response. Sometimes responses to earlier questions can influence responses to later questions on an instrument. Even when the real sentiments of the respondents are measured, the study is flawed somewhat if these statements have been influenced by the questionnaire itself.

Procedures and/or techniques to alleviate the effects of instrumentation include: (1) provide specific definitions for all terms associated with the variables under study, (2) provide space for the respondents to describe any changes that may be perceived in meanings or definitions from one administration to the next of an instrument, (3) administer alternative forms of the instrument to cohort subsamples and compare results, and (4) keep in touch with the professional literature for other suggestions in improving the questionnaire during the conduct of the study.

Design Selection

In general, the study design is selected only after the research question has reached its final form. The practical design will fit the hypotheses, the purpose of the study, the natural settings of the sample, and social and educational conditions.

The choice of a longitudinal design to observe growth, change, or patterns should be governed by the identification of cohort differences and attrition rates which introduce selection effects. Chapter II examines and compares the advantages and disadvantages of seven longitudinal study designs: (1) cross-sectional, (2) single longitudinal, (3) matched data, (4) time-lag, (5) convergence, (6) cross-sequential, and (7) time-series. Findings will be similar among all seven aforementioned designs when attrition rates and choort differences are small.

Another persistant problem plaguing longitudinal studies is the lack of control over environmental effects during the course of the study. The fact that the researcher ages with the study may also have negative bearings—specifically, reduced "investigation interest" and increased "experimental attrition."

Pucel cites the major longitudinal design problem of collecting data on individuals and their programs from many locations and converting that data to a format for study. His recommendations include first, the development of a cross-referencing system and, second, the development of a computerized data storage system.[30]

The challenge for researchers is to anticipate the problems and alleviate them by collecting accurate, complete, and valid data. Much can be done to the data after the fact. However, the best efforts cannot save an incomplete or inaccurate data base.

Summary

This chapter was intended to provide a conceptual framework for longitudinal studies in vocational education. It presented facts, ideas, issues, and problems dealing with longitudinal studies as they do and can relate to vocational education evaluation and accountability.

Vocational education has its roots in the apprenticeship system of ancient times. It started in America in 1646 and was gradually shaped by social and economic changes and initial and continuous legislation. With the passage of time from agrarianism to industrialization, from automation to space technology, vocational education has transformed from the early apprenticeship system to public and private school systems at all levels. The changing complexion of socioeconomic conditions provided more employment opportunities, and demanded greater levels of occupational skills. These changes affected those involved in vocational education.

In 1963, the Vocational Education Act was strengthened, refined, and redirected. By including all the previous vocational legislation, the 1963 Act became the "umbrella" vocational education act. Moreover, in 1976 the Educational Amendments Act, Title II (P.L. 94-482), called for vocational education program evaluation and effectiveness data. This legislation reflected the public, and specifically the policy makers', concern and awakening to the importance of evaluation and accountability. Their attention had been prompted by the fact that responses to these topics appeared to give support to a need for carefully designed longitudinal studies in vocational education.

It appears that today, vocational education is undergoing a microscopic examination by more people and for more reasons than at any other time in its history. Assurance of measurable output and quality human resource development is being increasingly demanded. To respond to the government's call, to cope with the evolving socioeconomic forces, to review the upward trend of vocational education's gaining its momentum in the current status quo, those involved in evaluation and accountability efforts should feel it incumbent to measure the effectiveness, efficiency, and relevancy of the vocational education. And consideration of longitudinal efforts appears both timely and appropriate.

Terman's work in the 1920s with gifted children may be considered the genesis for educational longitudinal studies. After Terman, we identified eighteen studies relevant to vocational education evaluation and accountability. During the 1960s and 1970s, four well-known large-scale studies at the national and state levels were accomplished. They are Project TALENT on the career development of American youth, National Longitudinal Surveys of labor market experience, National Longitudinal Surveys of the high school class of 1972, and the Youth in Transition of the nation's tenth graders. These studies as delineated afore not only served as exemplars for the followers, but also evidenced its function to and the interaction with vocational education.

Despite critical problems encountered by previous longitudinal studies, the longitudinal efforts have the potential for playing a more significant role in enabling the producers and consumers of vocational education to hold the promise for a more responsive vocational education.

The legislative requirements and the concerns of the state and local vocational education personnel for improving the delivery of vocational education and its products have provided concepts for the design of longitudinal studies. Previous efforts, such as Project TALENT, National Longitudinal Class of 1972, Youth in Transition, and others have provided designs which can guide vocational educators in development of longitudinal studies. And then these proposed studies can aid in responding to the evaluation and accountability issues and make vocational education more responsive to their client needs.

CHAPTER III

BASIC STRATEGIES AND PROCEDURES FOR LONGITUDINAL STUDIES OF FORMER VOCATIONAL STUDENTS

This chapter specifies basic strategies and procedures for designing, planning, and conducting longitudinal studies of former vocational students. In the purpose of bringing organization to a topic as potentially unmanageable as this might be, these specifications are divided into sections dealing with various areas and issues in which problems might be encountered. These include procedures involving sampling, data collection methods, experimental or quasi-experimental design considerations, instrumentation, data management, statistical analyses, and project administration and management. Seven major longitudinal designs are also examined in light of their advantages and disadvantages. As the perceptive reader will note, many of these specifications are interrelated.

The contents of this chapter were derived from numerous sources, all based upon the common domain of standard research theory and practices, as well as personal experiences of the authors. Major referencing of strategies and procedures have been drawn from the Pennsylvania Vocational Development Study (VDS) and the California Statewide Longitudinal Study (SLS). To avoid voluminous internal referencing, documentation is provided only for the sake of clarity and identifying original sources of ideas. An extensive, but by no means exhaustive, bibliography contains both referenced and nonreferenced entries for further exploration. The annotated bibliography offers additional detail on selected longitudinal studies.

Research Procedure

In general, there are four approaches to the collection of student follow-up data: the questionnaire, the telephone interview, the personal interview, and the examination of records. Which approach or combination of approaches to use must be determined early in the study because everything else in the planning and preparation process is governed by data collection. Each method has its advantages and disadvantages but, in general, questionnaires are necessary with large samples and interviews are possible with smaller samples. Although large-scale longitudinal studies became popular over the last twenty years with the development of the computer, there appears to be some movement currently toward choosing smaller samples in a more careful manner and striving for 100 percent response rate. Moreover, using an interview approach in combination with the mail-survey questionnaire is seen as an effective strategy toward addressing efforts toward increased response rates.

Number and Timing of Follow-ups

A basic decision needs to be made at the beginning of a longitudinal study concerning the number and scheduling of data collections. The answer to this question depends largely on the reasons for the study (e.g., a study of vocational development process as opposed to required federal accountability concerning job placements). The type of survey used, sample size, and resources available will also affect this decision greatly. For the purpose of a follow-up of vocational graduates there is most typically one data point near the end of high school and a second within the first year after graduation. Many other designs should be considered, including collecting data at several points while students are still in school and several after graduation. A mixture of longitudinal and cross-sectional data points would be also useful in some cases. These approaches could be typical time-series designs where the same measure or pieces of data are collected at each point, or could include a whole series of different measures which are particularly relevant to each point in time. For example, the latter approach with student records employed for seventh- and eighth-grader data and a series of questionnaires and instruments employed at many in-school points in each grade through to graduation could be considered as an ideal approach. Additional data points after graduation at three or six months, one year, and others planned for later years.

Schedule of Mailings or Contacts

Related to the problem of when and how many data points to employ are the questions of when to mail or make the initial contacts, how frequently, and in what manner to pursue additional contacts necessary to collect the data. Times of the year should also be considered. For example, Christmas and summer may be bad times for employment-focused follow-up, but then again, subjects who are hard to reach may be more available at these times. The second question concerning timing of mailing and contacts includes when to mail the preletter, first wave, second wave, and nonrespondent contact. When the telephone or personal interview is used, the time of day or week needs to be considered. For example, a time schedule utilizing a mailed questionnaire could include a birthday card reminder and a change of address card, a beginning-of-the-month first mailing, a three-week second mailing, and an additional three-week telephoning of nonrespondents. Telephone calls are generally made in the evening.

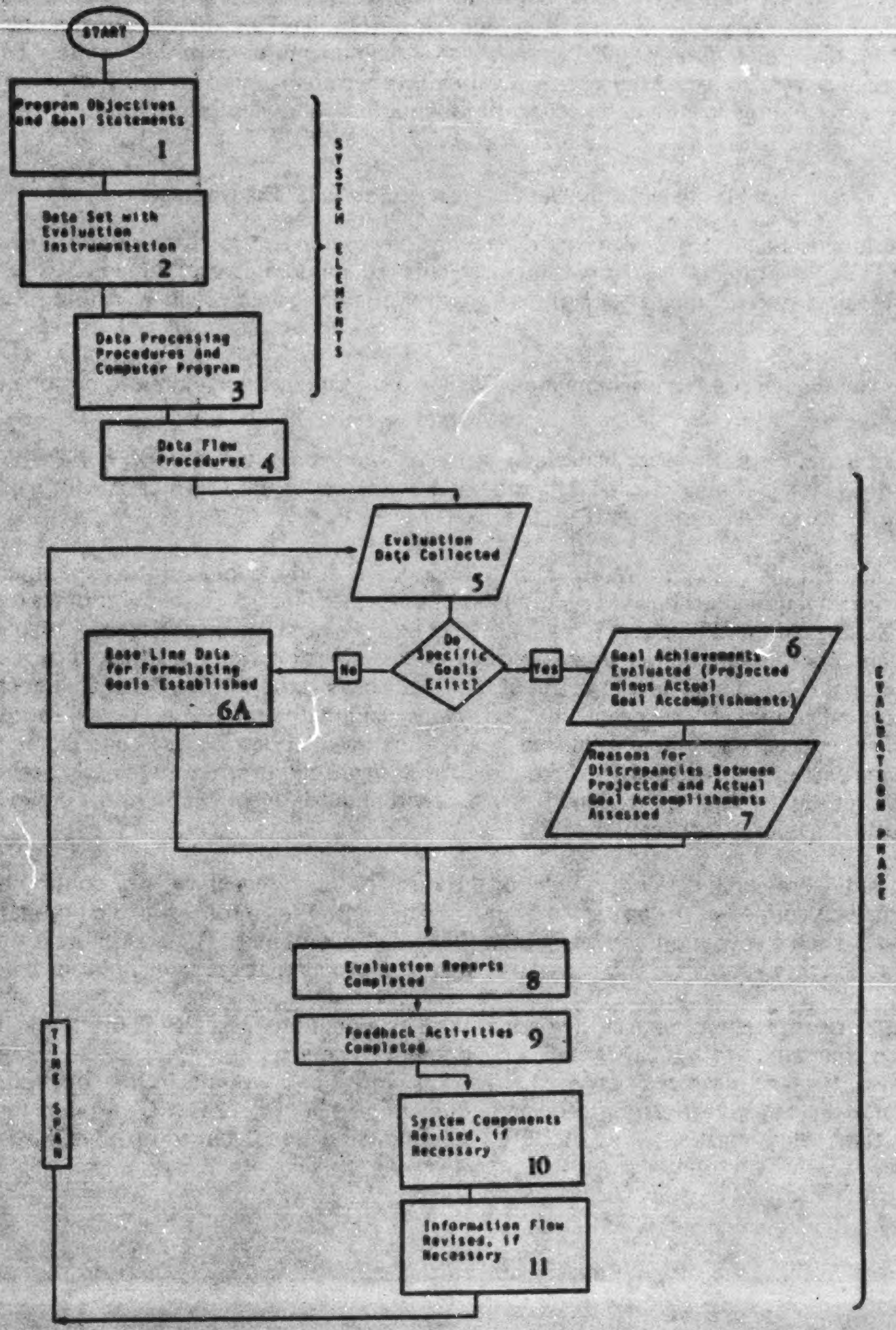
Employer Follow-up

Although in most cases it is assumed that it is the student from whom data will be gathered for a longitudinal study of vocational education graduates, the inclusion of the employer at one or more data points needs to be considered. Employers are generally accessed through the student and may be contacted by telephone or by mail questionnaire. Although many of the problems encountered and methods used in employer follow-up are similar to those used with students, some are unique. These include finding the employer, explaining the purpose and building the rapport quickly, getting to the right employer representative, selecting appropriate employer questions, maintaining confidentiality, and determining when to make contacts and how to motivate employers to cooperate. Given the mandate included in the Education Amendments of 1976 to ascertain whether or not "program completers and leavers are considered by their employers to be well trained and prepared for employment," it appears that there will be an increase in employer follow-up in the future.

Type of Data Required

The data included in any follow-up study, one-time or longitudinal, is determined by the purpose of the study. Figure 1 presents a longitudinal evaluation flowchart for guiding one in matching data requirements with study goals and objectives. In the case of vocational education follow-up studies, only a few pieces of data are necessary to satisfy the federal law. However, in order to gain the maximum benefit from a longitudinal study of vocational education students, a great deal of other in-school and out-of-school information could be useful. As an example, the VDS project included the following in-school variables: aptitude measures (GATB, APT, CTMM, DAT); achievement (CAT, Grades, OTAT, SAT, CEEB); vocational maturity (CMI); occupational values (OVI);

FIGURE 1
LONGITUDINAL EVALUATION CYCLE


START
Program Objectives and Goal Statements 1
Data Set with Evaluation Instrumentation 2
Data Processing Procedures and Computer Program 3
SYSTEM ELEMENTS
Data Flow Procedures 4
Evaluation Data Collected 5
Do Specific Goals Exist?
No
Yes
Base Line Data for Formulating Goals Established 6A
Goal Achievements Evaluated (Projected minus Actual Goal Accomplishments) 6
Reasons for Discrepancies Between Projected and Actual Goal Accomplishments Assessed 7
EVALUATION PHASE
Evaluation Reports Completed 8
Feedback Activities Completed 9
System Components Revised, if Necessary 10
Information Flow Revised, if Necessary 11
TIME SPAN

Source: H. Starr, et al. *A System for Statewide Evaluation of Vocational Education* (Columbus, Ohio: The Center for Vocational and Technical Education, 1972), p. 8.

interest (VPI, OVIS, KUDER); idealistic and realistic occupational and educational plans; hobbies, health status, personal traits; attendance; curriculum; father's and mother's occupational and educational level; number of siblings; sex; and age. Out-of-school variables included: marital status, employment status, educational status, occupational aspirations and expectations, political involvement, school and community ratings, occupational values, college attendance, grade point average, value of high school subjects, satisfaction with school, number of jobs, weeks to first job, beginning and present salary, distance to present job, job satisfaction, and unemployment information. While many of these variables were collected only once, a number were collected at several points in time. Figure 2 presents an organizational flowchart of longitudinal follow-up information.

Longitudinal Study Design: Advantages and Disadvantages

Use of longitudinal study designs has risen with the rapid expansion of evaluation research in education. In all longitudinal designs two requirements remain dominant: (1) the necessity of repeated measures, and (2) the use of time as a master variable against which everything else is ordered.

Baltes and Goulet present a sample model of the research question addressed by longitudinal design:

$$B = f(T)$$

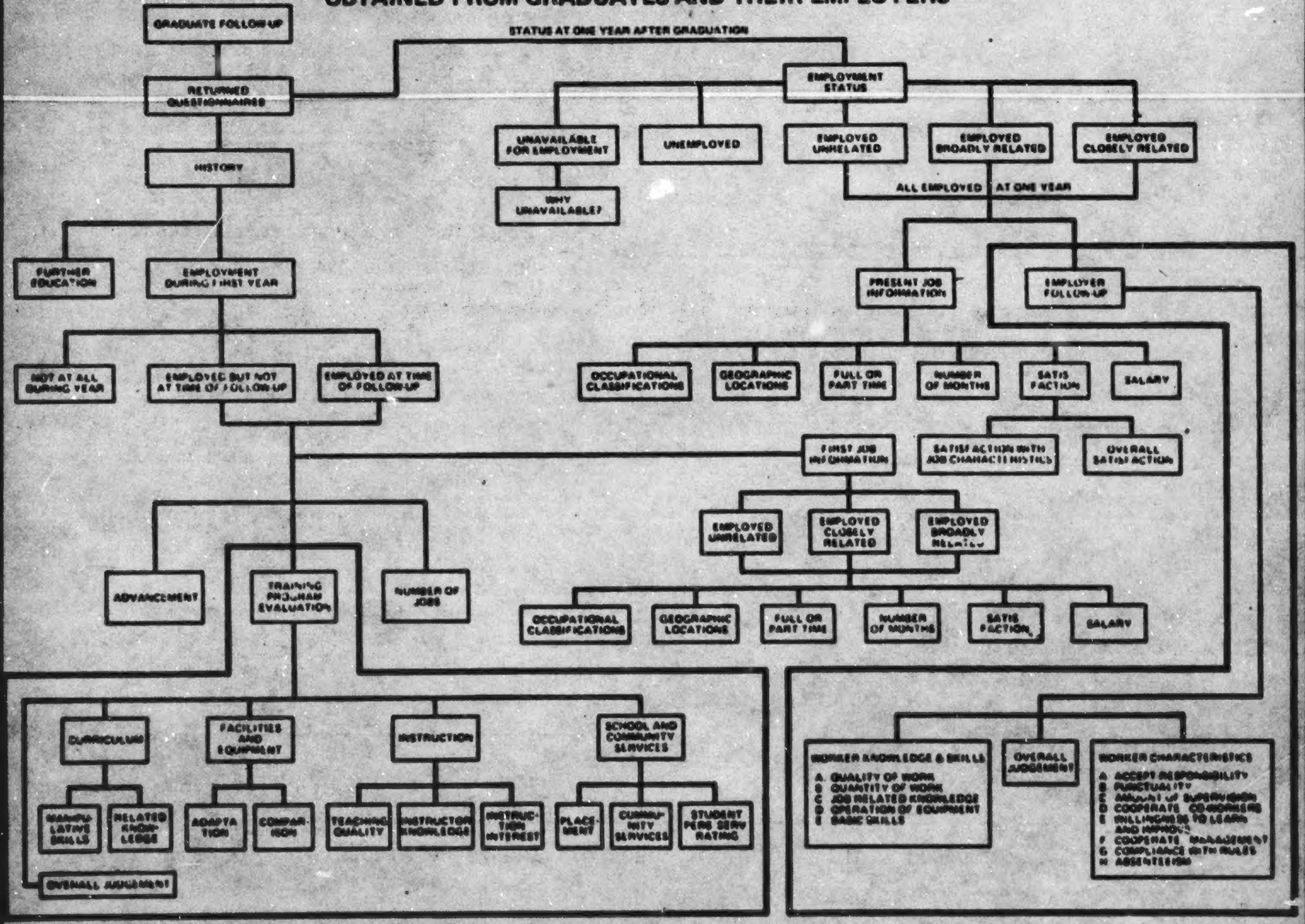
where B represents the behavior or behavior changes of interest as a function of T, the time periods of observations.[33] The primary use of longitudinal designs in education settings is within group observation, but they can also be used for between-group studies.

When causality is an important aspect of a longitudinal study, choice of the experimental or quasi-experimental design becomes very important since other plausible rival hypotheses must be ruled out. Sources of internal and external invalidity must be controlled so that the variables may be measured with confidence in order to answer the research questions and questions of causality. Choice of a longitudinal study design as well as use of its true or quasi-experimental form are dependent on many situational conditions and problems. Generally speaking, the true experimental forms are desired; however, practicality may influence greatly the research question itself and dictate the use of quasi-experimental approaches. True experimental designs require strict methodological or statistical controls for between-group comparisons. Thus, a longitudinal study which monitors only within-group data may utilize a quasi-experimental design.

Longitudinal research designs provide for the study of individual changes or cohort changes. A cohort may be defined as the aggregate of individuals chosen from some specific population who experiences the same educational events within the same time interval. Thus, a cohort is a sample of students who enter, experience, and leave an educational program at the same point in time.

Table 2 presents longitudinal study designs used in educational research. Notation in Table 2 is as follows: the *samples* ($S_1, S_2, S_3 \ldots S_k$) are predefined cohorts; *ages* ($A_1, A_2, A_3 \ldots A_i$) refers to *grade level; times* of measurement ($T_1, T_2, T_3 \ldots T_j$) refers to the points in time of pretesting, posttesting, end-of-academic-year testing, etc.; and *observations* ($O_1, O_2, O_3 \ldots O_m$) refers to scores on tests, rating scales, questionnaires, etc. Each longitudinal design depicted in Table 2 will be discussed in the subsections which follow.

POSSIBLE ORGANIZATION OF THE FOLLOW-UP INFORMATION OBTAINED FROM GRADUATES AND THEIR EMPLOYERS*


GRADUATE FOLLOW-UP
RETURNED QUESTIONNAIRES
STATUS AT ONE YEAR AFTER GRADUATION
EMPLOYMENT STATUS
UNAVAILABLE FOR EMPLOYMENT
WHY UNAVAILABLE?
UNEMPLOYED
EMPLOYED UNRELATED
EMPLOYED BROADLY RELATED
EMPLOYED CLOSELY RELATED
ALL EMPLOYED AT ONE YEAR
PRESENT JOB INFORMATION
EMPLOYER FOLLOW-UP
OCCUPATIONAL CLASSIFICATIONS
GEOGRAPHIC LOCATIONS
FULL OR PART TIME
NUMBER OF MONTHS
SATIS FACTION
SALARY
SATISFACTION WITH JOB CHARACTERISTICS
OVERALL SATISFACTION
HISTORY
FURTHER EDUCATION
EMPLOYMENT DURING FIRST YEAR
NOT AT ALL DURING YEAR
EMPLOYED BUT NOT AT TIME OF FOLLOW-UP
EMPLOYED AT TIME OF FOLLOW-UP
FIRST JOB INFORMATION
EMPLOYED UNRELATED
EMPLOYED CLOSELY RELATED
EMPLOYED BROADLY RELATED
OCCUPATIONAL CLASSIFICATIONS
GEOGRAPHIC LOCATIONS
FULL OR PART TIME
NUMBER OF MONTHS
SATIS FACTION
SALARY
ADVANCEMENT
TRAINING PROGRAM EVALUATION
NUMBER OF JOBS
CURRICULUM
FACILITIES AND EQUIPMENT
INSTRUCTION
SCHOOL AND COMMUNITY SERVICES
MANIPULATIVE SKILLS
RELATED KNOWLEDGE
ADAPTATION
COMPARISON
TEACHING QUALITY
INSTRUCTOR KNOWLEDGE
INSTRUCTION INTEREST
PLACEMENT
COMMUNITY SERVICES
STUDENT PERS SERV RATING
OVERALL JUDGEMENT
WORKER KNOWLEDGE & SKILLS
A. QUALITY OF WORK
B QUANTITY OF WORK
C JOB RELATED KNOWLEDGE
D OPERATION OF EQUIPMENT
E BASIC SKILLS
OVERALL JUDGEMENT
WORKER CHARACTERISTICS
A ACCEPT RESPONSIBILITY
B PUNCTUALITY
C AMOUNT OF SUPERVISION
D COOPERATE COWORKERS
E WILLINGNESS TO LEARN AND IMPROVE
F COOPERATE MANAGEMENT
G COMPLIANCE WITH RULES
H ABSENTEEISM

*Reproduced from Pucel, David J. *Minnesota Vocational Follow-Up System: Rationale and Methods.* Department of Vocational and Technical Education, University of Minnesota, Minneapolis, MN. 1973, p. 53.

TABLE 2

SYMBOLIC REPRESENTATION OF LONGITUDINAL STUDY DESIGNS

1. Cross-sectional design

	T_1
S_1A_1	O_1
S_2A_2	O_1
.	.
.	.
.	.
S_kA_1	$O.$

2. Longitudinal Design

	T_1	T_2	...	T_j
S_1	O_1A_1	O_2A_2	...	O_nA_i

3. Matched Data Longitudinal Design

	T_1	T_2	...	T_j
$S_1{}^*$	$O_1^*A_1$	$O_2^*A_2$	...	$O_n^*A_i$

where $S_1{}^*$ represents only the sample subject with observations at each and every T_j.

7. Times Series Design (Example)

	T_1	T_2	T_3	T_4	T_5	T_6
S_1	O_1A_1	O_2A_2	O_3A_3(X)	O_4A_4	O_5A_5	O_6A_6

4. Time-lag Design

	T_1	T_2	...	T_j
S_1A_1	O_1			
S_2A_1	O_1	O_1		
.		.		.
.			.	
.			.	
S_kA_i				O_1

5. Convergence Design (Example)

	T_1	T_2	T_3
S_1	O_1A_1	O_2A_2	O_3A_3
S_2	O_1A_3	O_2A_4	O_3A_5
S_3	O_1S_5	O_2S_6	O_3S_7

6. Cross-sequential Design

	T_1	T_2	...	T_j
S_1A_1	O_1	O_2	...	O_n
S_2A_2	O_1	O_2	...	O_m
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
S_kA_1	O_1	O_2	...	O_n

1. Cross-Sectional Design

The cross-sectional design is used for the observation of group behavior rather than individual development. The major advantage of the cross-sectional design is its ability to collect data at only one time of measurement. It is a collapsed version of the usual longitudinal study. This design is particularly well-suited for pilot studies or initial observations when planning a study since relatively little time is required. Also, since only one testing or observation is taken, no history effects or test-retest effects are present.

The disadvantages of the cross-sectional design are all methodological rather than practical. Cross-sectional studies include cohort differences and are thus influenced by cultural changes. For this reason this design is often avoided. Further, problems of testing or surveying are found due to cultural changes. Finally, experimental mortality remains a problem, especially in secondary and postsecondary programs where dropping out is observed as in vocational education programs.

Analysis of variance (ANOVA) on independent groups and regression techniques are the two data analysis techniques most frequently used for cross-sectional studies. The ANOVA technique interprets the significance of the total observed change between groups. The regression technique allows comparisons of all measurements directly. This regression technique is preferred when prediction of changes in behavior is of interest.

2. Simple Longitudinal Design

Longitudinal study designs allow individual or cohort observation over any period of time desired. The pretest-posttest control group design is the simplest experimental or quasi-experimental depending upon the selection procedure used.[33]

The advantage of the simple longitudinal design is basically its ability to study a cohort for as long a time as necessary. This enables the researcher to become very involved with the data. This design also allows for a great deal of descriptive statistics which can be useful in communicating with general audiences.

The disadvantages of this design are both practical and methodological. Practically, longitudinal designs are very expensive and easily "over-designed." Researchers may lose interest or even leave during a long period of observations. Maturation and historical effects are common since the cohort observed is aging and maturing while being observed. Experimental mortality is a particular problem unless dropouts remain observed. Usually, the group observed at the last time of measurement is very different from the group at the first time of measurement.

The most often used statistics for the simple longitudinal designs are the t-test and analysis of variance with repeated measures (ANOVAR). When a pretest is available, the analysis of covariance (ANCOVA) with the pretest score as the covariate is the most appropriate. Use of ANCOVA allows blocking on certain variables, thus providing more precision in interpreting changes observed during a research study. Statistical designs which include a pretest are the most powerful and also allow for the study of the effects of testing on the changes observed. When interactions can be ruled out or are of no interest, a nesting design may be most advantageous. Nesting will improve statistical precision and will enable researchers to generalize research findings.

ANOVAR, followed by post hoc comparisons, will avoid problems of unknown actual alpha levels. ANCOVA with the pretest as the covariate is the best approach to the analysis of longitudinal data when pretest data are available. Factor analysis and cluster analysis may help determine which variables change together over time.

Both univariate and multivariate ANOVA are appropriate to repeated measure analysis, the difference is robust to the assumption of heterogeneity and normality; however, a responsible researcher will test each assumption routinely before analysis.

3. Matched Data Longitudinal Design

The most common research question addressed by the matched data longitudinal design is, "What changes were observed for those individuals who experienced the entire treatment under study?" Hence, only those individuals for whom all measurements are available are included in the study.

The great advantage of the matched data over the simple longitudinal design is the avoidance or mortality problems. Since the same individuals are present at each time of observation, there is a much better picture of individual change. Cohort differences will not affect the analysis. In this instance a posttest is not useful.

One disadvantage of this design is the possibility that when all data are collected they cannot be applied since so few students are left for analysis. Furthermore, the matched data design introduces selection effects into the study. Individuals who dropped out may have done so for a common reason. This introduces systematic error into the design and leaves a biased sample for analysis.

Statistical approaches for the matched data designs are the same as for longitudinal designs. However, since the Ns will always be the same for each set of measurements, the assumptions of the statistical analysis are more likely to be met. Equal Ns also allow for stronger correlational and regression analyses since comparisons are on a one-to-one basis.

4. Time-Lag Design

Time-lag designs are infrequently found in educational research since they require the testing of students based solely on their birthdays. In most cases, however, time-lag designs are more powerful than longitudinal or cross-sectional designs.

The advantage of the time-lag comparison is the emphasis on chronological age rather than grade level. This allows for within-grade level *and* between-grade level comparisons. This design avoids the confounding with age and maturity found in longitudinal designs. A time-lag design allows the measurement of school or treatment effects independently of age or maturity factors.

Two disadvantages are associated with time-lag designs: (1) possible contrasts are restricted to within-grade or adjacent-grade contrasts, and (2) more research effort is required to implement time-lag designs than simple longitudinal designs. Time-lag designs cannot be used if cohort changes are of interest or grade levels rather than chronological age are studied.

Statistical analyses of time-lag data are very similar to those of the longitudinal designs. But, since individuals are matched on age while length of schooling varies, different variables are examined and interpretations will differ. Generalizability of results will be restricted greatly since programs are generally based on grade level rather than chronological age. Since all groups in time-lag designs are independent, the t-test and ANOVA procedures will change accordingly from the correlated and repeated measures of the longitudinal designs. The time-lag design makes between-subject rather than within-subject comparisons. Therefore, if between-group comparisons are of interest and length of schooling or program participation is important, the time-lag design will be more advantageous and powerful than the longitudinal design.

5. Convergence Designs

The practical problems of performing longitudinal research and the methodological disadvantages of cross-sectional research have led to various combinations of both designs. The convergence design is an accelerated longitudinal approach.[34] Convergence design overcomes some practical time problems of longitudinal research.

The practical advantage of the convergence design is the ability to study changes over many years of time in much less research time. By overlapping cohorts, long periods of study can be reduced to practical research time. The convergence design is extremely flexible and can be applied differently to all research situations.

The convergence design is more complex in a statistical sense. Cohort behavior change can be analyzed by all the techniques previously discussed for the longitudinal and cross-sectional designs. Regression discontinuity is possible, but probably will not hold up to assumptions. A least-squares analysis of repeated measures is used for within-group comparisons and post hoc comparisons are used for between-group comparisons. For convergence design analysis, the comparison of posttest scores is more appropriate than comparison of change (gain) scores to avoid the increased influence of errors of measurement.

6. Cross-Sequential Design

Cross-sequential designs are seldom used in educational research since they do not allow for cohort observation. Basically, the cross-sequential design is a repeated cross-sequential cross-sectional approach. A cross-section of cohorts is taken and this sample is measured repeatedly. However, these samples must stay at grade level for the design to be applied. It is not possible to reexamine cross-sectional samples at stable grade levels unless only grade repeaters are studied. Hence, only in a study of grade repeaters or nonprogressing students would the cross-sequential design be useful. If, however, chronological age is of interest rather than level of schooling, then the cross-sequential design might be considered.

7. Time-Series Design

Time-series designs are quasi-experimental methods. The time-series design is an extension of the one-group pretest-posttest design. This extension is necessary because of the many sources of invalidity in the one-group pretest-posttest design.

The interrupted time-series experiment, as shown in Table 2, is the first level of designs. Here many measurements are taken and an experimental change is introduced at some point. It is expected that measurements following this will differ from previous measurements. There are two major disadvantages of this interrupted series: (1) there is no control for history, and (2) the statistical analyses are difficult. Also, mortality and selection could be as problematic for the time-series designs as for other longitudinal designs. The interrupted time-series design is used for within-group comparisons only.

However, this design is especially well suited to situations where records or data already exist. In such cases the taking of data will not be novel and become a source of invalidity in itself. There are few significant tests available for this design.

The multiple time-series design is an extension of the nonequivalent control group design. Campbell and Stanley provide an example of the multiple time-series design.[36] This design allows for between-group testing and eliminates the problem of historical effects. The number of control groups may very to include as many different types of groups as are of interest. Ideally, assignment to groups is made randomly.

The main disadvantage to this design is the lack of appropriate statistical methods to analyze data. ANOVA designs are not practical because of the high levels of correlation between measurements and variables. The analysis most used is the logical defense of findings against probable rival hypothesis for the between-group differences, based on prior experience and knowledge.

To summarize, two requirements remain dominant in longitudinal study designs: (1) the necessity of repeated measures, and (2) the use of time as the master variable against which everything else is ordered. When causality is an important aspect of a longitudinal study, choice of the experimental or quasi-experimental design becomes very important. Generally speaking, the true experimental forms are desired; however, practicality may dictate the use of quasi-experimental approaches.* Seven longitudinal study designs are presented in narrative and symbolic forms along with their concomitant advantages, disadvantages, and statistical techniques.

Sampling Problems

Compliance with federal law is a primary consideration in planning longitudinal studies of former vocational students. A minimum requirement of P.L. 94-482, the Educational Amendments of 1976, is the collection of data, *using statistically valid sampling techniques,* to determine the extent to which former vocational students (1) find employment in occupations related to their training, and (2) are considered by their employers to be well trained and prepared for employment.

Although it may be possible to fulfill the letter of the law by providing the specified data collected over time at two different points—one in school and one sometime after graduation, it would be more in keeping with the spirit of the legislation and more profitable, as well, to undertake continuous and complete longitudinal studies which investigate the entire vocational preparation and development process.

There are three types of longitudinal studies: trend, cohort, and panel. Trend studies follow general population; cohort, specific populations. Panel studies, the main focus of this chapter, follow the same subjects over time.

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* For further discussion of quasi-experimental designs, see Campbell and Stanley, p. 47.

A major challenge for the researcher is to select a representative sample for the longitudinal study from a defined population. This entails (1) determining whom to include in the sample and size, and (2) deciding what procedures to use in drawing the sample.

Defining the Population

Differences between secondary and postsecondary schools must be considered in planning longitudinal studies of vocational students, completers, and leavers. Secondary schools, whether three- or four-year high schools, seldom have more than three thousand students. Populations are relatively stable. Curricula are fairly well defined, but limited in their vocational offerings, preparing students for entry level, low-status jobs. In comparison with the postsecondary schools, the secondary schools' cumulative records are generally complete and accessible.

Postsecondary institutions (e.g., community colleges, vocational schools, adult education centers, etc.) serve multiple occupational training purposes. They vary in size, but have comparatively larger student populations than high schools and unstable enrollment patterns. Student records are accessible but often incomplete. Many students who are admitted fail to enroll. Many who enroll do not attend class or drop out before the end of the term. For example, in California the model number of courses enrolled in and/or passed by community college students is one.

Ambiguity about what constitutes a vocational major is particularly apparent on the postsecondary level. Given that the two most frequently declared majors are "undecided" and "self-enrichment," it is virtually impossible to define students strictly on the basis of their admissions statement. To complicate matters, many students who specify these majors are enrolled in obviously vocational courses (e.g., three electronics, two computer science, one technical English). By the same token, there are many students with declared vocational majors who do not enroll in any courses required or suggested for those majors. On the whole it appears that stating a major on an admissions form is only a formality for many students.

Taking these differences into account, the researcher will need to collect different kinds of data at each level and employ different techniques as well. Data essential at the postsecondary level (e.g., marital status and enrollment status) may be irrelevant at the secondary level. Procedures useful at the high school, such as perusal of cumulative records, may not be worthwhile at the community college level.

In short, research at the secondary level and research at the postsecondary level are different. The researcher who does not take these differences into account is going to have difficulties or, worse yet, combine the data from both levels and reach unwarranted conclusions.

Drawing the Sample

Timing is another major consideration in conducting longitudinal studies. On the secondary level, a large proportion of a selected sample of tenth-grade vocational students will still be available for data collection in the twelfth grade, or even a year after graduation. In postsecondary institutions a sample of first-time students in the fall semester will rapidly deteriorate. According to available data, from the Statewide Longitudinal Study in California (SLS), about 30 percent will be lost after the first semester and half will fail to enroll the following fall.[36] If one were fortunate enough to have 50 percent of the sample remaining, one would find that many had not earned any college credit and few would have completed the equivalent of the first-year specified vocational program.

Remembering that a major purpose of a longitudinal study for vocational education is to follow students after they have left school, researchers should take special precautions to maintain contact with leavers and completers.

There are many methods for selecting a representative sample once the problem specified above has been addressed. Because of their relatively small enrollments, secondary institutions can frequently start with a total population or census sample. In postsecondary institutions, the more popular majors such as business, accounting, and real estate may have more than a thousand students enrolled. For individual departments conducting a longitudinal study, a census sample may be appropriate. For a statewide study, a one or two percent sample will suffice.

A simple procedure for selecting specific proportions of the population is to use the last two digits of the student's identification number. This was done both for the Statewide Longitudinal Study of California and the pilot study. Even when Social Security numbers are used as student identification numbers, the procedure is effective. The Social Security Administration has declared that the last two digits are assigned randomly. Each pair of digits used will result in 1 percent of the population being identified. To determine sample size, it is suggested that an acceptable level of confidence is one which assures a plus or minus 4 percent error. The precise numbers can be found in any appropriate reference book. This is an area where large schools have an advantage. With a population of 1,000, a sample size of 376 is required, while a population five times that size requires a sample of only 536.

Here again, working in a secondary school is easier than in the postsecondary school because of the stable nature of the customers. In the latter, if one wishes to maintain a sample of more than 500 and is aware that after one year about half the sample will no longer be attending college (and nonattendees have a higher possibility of being unreachable), one must start with a sample size considerably larger than that called for by the reference books. It may be advisable to collect double the recommended sample size. For a more detailed discussion on sampling designs for longitudinal studies, the reader is referred to the selected bibliography and the citations for Project TALENT, Youth in Transition, National Longitudinal Study of the Class of 1972.

Data Source: Records and Opinions

There are two sources of data for longitudinal studies: student records and student reactions. The latter are much more difficult to collect, but their value is concomitantly greater. Student opinion data can be obtained from mailed questionnaires, structured interviews, or unstructured interviews.

Cumulative Records

Gleaning best describes the process of extracting data for longitudinal studies from student records. Some secondary and postsecondary schools seem to collect very detailed information about their clients. The job of research is to:

1. Predetermine which data may be relevant for their studies;
2. Be sure that the data are available at all participating schools in a format that is identical, or can be made thus;
3. Clarify all of the ambiguities that will evolve. For example, during the first semester of the SLS, all the Indochinese attending one large urban college refused to be classified as "Asian." That college accounted for 90 percent of "Other" in the ethnic distribution.

Student Perceptions: Questionnaires and Interviews

The most important information in a longitudinal study comes from the perceptions, evaluations, and comments of the students and employers. If one were to use the data extracted from the student records, the study would yield little that could be used to improve vocational programs. Other data bases must be used.

Many researchers consider "Opinion Data" to be subjective. However, for longitudinal studies, one does not draw a sharp line between subjective and objective data elements. Grade point averages taken from student records can be considered subjective opinions of instructors. In postsecondary schools, a student's declared major is often determined on a whim at the spur of the moment. Two recommended procedures for collecting student data are the mailed questionnaire and the telephone interview.

The mailed questionnaire. In order to use a mailed questionnaire, the researcher must either predetermine some reasonable number of answers to each question or ask a number of open-ended questions and leave room for the respondent to write his answer. In the first instance, the predetermined answer to questions will seldom be sufficient for the respondents to select. In the pilot study for the SLS, ten reasons for dropping classes were postulated; this was expanded to twenty-five for the first semester data collection for the SLS and at present is twenty-eight. Even with twenty-eight potential reasons for dropping classes, we were at a loss to classify "student dies" or "student is in jail." (We finally used "illness" for the first and "moved" for the second.) If too few categories are used, the category "other" will be the most popular choice. "Other" should account for less than 5 percent of responses.

Another difficulty with a mail questionnaire is the rate of return. Secondary school students still attending class are much more likely to return questionnaires than those in postsecondary institutions. But even for secondary students, once they are completers or leavers, they will be much less inclined to return questionnaires. In postsecondary schools return rates are abysmally low among both attendees and those who left the institution. For a random sample of community college students who finish only a few courses and leave, it is not uncommon to have less than a 10 percent return.

The interview. A preferred method of collecting student perceptions is the structured interview conducted by a trained interviewer using a carefully designed interview guide. If only one interviewer is doing the work in one location, the interview guide can be simple. The more persons and the more locations involved in the study, the more carefully the interview guide must be structured.

In essence a structured interview is one constructed for the purpose of constraining both what the interviewer says and how the interviewer records the information received. This constraint is exercised through the use of an interview guide, similar to a theatrical script, and a set of definitions for each category of response data. The purpose of this constraint is to ensure that "common data" is collected in a "standard fashion" at all locations. Without this, the aggregated data become meaningless.

An interview guide, often combined with the sheet on which data is collected, tells the interviewer what to say. For each item, there is a statement or question; for example, "What is your major?"

It may be absurd to insist that an interviewer stick to these words, but were this guide not provided, interviewers might easily substitute, "What are you studying?" Although this seems to address the same issue, it may not. Someone majoring in computer science and getting requirements out of the way might be studying English the semester the question is asked.

In training interviewers, it is important that they learn the intent of the question because the respondent may not understand a question, and it may take some discussion before the issue is resolved. If interviewers are merely parroting the instructions in the interview guide, they will be unable to explain the items to respondents who have difficulty in understanding.

For each question the interview guide/data sheet contains a set of response categories into which the respondent's answer can be placed. The interviewer's job is to ask the question, listen to the answer, and then to fit the response into one of the response categories using the definitions provided.

For many interview questions, it is possible, a priori, to write response categories and definitions which will cover 95 percent of all responses, leaving only 5 percent to be placed in that ubiquitous "other" category. This is not true for all kinds of questions. Indeed, the open-ended response may be termed one of the curses of social science research. There is, however, a routine to deal with this problem.

In the Pierce College Longitudinal Study (PCLS), the pilot for the SLS, information about why students dropped classes was desired. It was possible to develop a number of categories a priori, but it was known in advance that the list was inadequate for the purpose. A procedure was determined for dealing with those responses that did not fit the a priori categories. The nonstandard responses were retained and placed in piles containing similar answers. The similarities were then written up as definitions and, as additional calls were made, these definitions were refined until they were effective. By the end of the process, twenty-six categories of reasons for dropping classes had been developed; categories which were used in the SLS and which accounted for less than 5 percent of the responses to a similar question in the SLS.

In the SLS, where there was a larger number of subjects to call, the participating colleges placed responses to open-ended questions (e.g., "In what way does your physical handicap give you problems here at college?") on index cards, one response for a particular item on a card. These cards were then sent to the central office. The responses from one college were teased into piles containing similar replies, definitions were written as before, and these were cross-validated using the index cards from the other colleges.[37]

This process takes a great deal of time and effort, but it is well worth it in terms of the outcome —the ability at the end of one semester of work to produce frequency counts of responses which were originally of the "open-ended" variety. Using this technique adds immeasurably to the value of a study because it enables the researcher to turn "qualitative" data into "quantitative" data.

Regardless of the effort expended in producing the interview guide and the response category definitions, the work will prove incomplete. Descriptions thought to be clear will contain ambiguous language, or response categories will prove to be inadequate. Testing interview guides is best done using an experienced interviewer with a small set of students not part of the regular sample. This testing sequence will identify most of the problems in the interview guide and category definitions, but not all of them. The way to deal with these is described immediately below.

Telephone interviewers and their interviewees are creative. They can discover many ways of escaping the best set of response categories or coming up with interpretations of instructions that were not at all what was intended. There appears to be no way around this problem. In the SLS every semester during the first few weeks of data collection, college coordinators called in with questions about instructions, about the meaning of questions, and about responses produced which did not fit the categories provided.

The problem with this kind of communication is that the project management knows that, if one coordinator has misinterpreted the information provided, or cannot deal with a respondent's reply, several others have or will have the same problem. There is a need for quick and effective communication before many erroneous data are collected. A partial answer to the problem is a newsletter, produced about every two weeks, and designed to provide different kinds of information —announcements of upcoming meetings, reminders of deadlines, and data sheet corrections. As soon as a query indicating ambiguity comes in from the field, the project management makes a decision for clarification and adds this response to an ongoing data sheet correction list. As soon as a reasonable number of these corrections have been written, they are incorporated in a newsletter and sent out to the field.

Before interviewing starts, interviewers should be carefully trained. This will take a minimum of two three-hour sessions. The first session should give the interviewers an understanding of the study and its purposes. This will aid them with difficult interviewees who have problems understanding the questions. The first session should also include an item-by-item discussion of the interview. It is crucial that each interviewer understand the intent of each question so that he can deal effectively with difficult respondents and incomplete or ambiguous answers.

The second session should include practice interviews with each other. This is best done on the intercom between offices, and should be followed by a discussion of the results. Each interviewer should conduct several interviews with different people. A third session could consist of interviewing sample subjects and discussing results. This enables interviewers to share with each other the problems they might have had.

Most interviewing should be done with all interviewers working in the same office under supervision. It will be a temptation to permit the interviews to be made from the homes of the interviewers. This should be allowed only after an interviewer has completed fifteen to twenty calls and has evidenced the maturity to collect appropriate and reliable data without supervision.

Data Collection Instruments

Regardless of what data point in the evaluation process is involved or what type of follow-up techniques are decided upon, one or more types of instruments are necessary. These may include standardized tests or inventories administered as part of in-school data or, in some cases, along with the collection of out-of-school data. Also, some type of recording sheets or cards will be necessary when data are gathered from records. Ultimately, follow-up instruments in the form of questionnaires or interview schedules will need to be constructed. The section and/or design of each of these is critical to the collection of reliable and valid data. Some of the instruments used in a comprehensive longitudinal study, such as the VDS in addition to numerous standardized tests and inventories, included: printed cards to access the school records, occupational and educational aspiration questionnaires printed on cards and used over several years to collect repeated measures of the responses, a four-sided twelfth-grade questionnaire printed on folded blue paper, a change of address card included with the birthday card mailing, a green optical scan one-year follow-up questionnaire with preprinted sequential numbers (two sides of two sheets), a yellow lottery ticket, and a telephone interview schedule.

Instrument Development

In developing the necessary instruments many decisions are necessary in addition to the major decision concerning what to include. The quality and wisdom of these decisions will be known only once the instrument is in use. Some of the decisions included questionnaire length (length of the questionnaire may be inversely related to the return rate); format (open or closed questions, branching, sequence); wording of questions (readability, cultural differences in language); physical appearance (use of color, printing process); and provisions for coding (prenumbered boxes, optical scanning).*

Questionnaire length. Although it is a commonly accepted notion that questionnaire length is inversely related to return rate, some studies have found mixed results concerning this factor. The conclusions from this research suggest that all the other factors which provide an incentive for the subject to respond will offset the negative aspects of length up to some point. In any case, the addition of each item to an instrument needs to be weighted against the possible information loss due to nonresponse. Some of the one-year follow-up questionnaires currently used to collect required vocational education accountability data are simple double-fold postcards with three to five directly stated questions (e.g., Are you employed? Where? Present salary?). These surveys often report return rates over 90 percent.

Format. Many questionnaire problems are created by poor format. In general, few open-ended questions should be included. All closed format questions need to have all necessary alternatives clearly presented. Branching instructions need to be very explicit (e.g., in bold type) and the questions need to have a logical flow. Some researchers suggest that potential problem questions be placed at the end of the questionnaire so as not to affect the other questions.

Wording of questions. In addition to all of the common-sense precautions that need to be taken concerning wording, two others need to be stressed: readability and cultural orientation of the questions. In the case of readability, there are many indices available to make sure that all of the subjects can generally read and understand the items or questions. For the purpose of most instruments and questionnaires used in vocational education follow-up studies, a fifth- to seventh-grade reading level is most appropriate. Concerning cultural bias, the background of the subjects needs to be considered so that every item or question makes sense to every subject. An individual's sex, socioeconomic status, race, national origin, and handicap are possible factors which may influence response to an item.

Physical appearance. This is probably the most important factor influencing the subjects' response. Anything less than standard print quality is likely to reduce return rate without adding anything significant to the cost. Other standard considerations include sufficiently large and varied print size, a balance of open space, attractive design, and good quality (weight) paper.

Provisions for coding. Coding or scoring should be considered at the time of instrument or questionnaire design. Not only should all closed alternative questions (items) be designed so that they can be easily converted to some quantitative scale, but provisions should be considered to set up the system at the time the instrument is developed. Here are two typical alternatives: (1) placing the data column number beneath the coding boxes that will be used directly on the printed instrument, and (2) printing the questionnaire on an optical scan sheet. The Minnesota Vocational Follow-up System has utilized the first approach, and the VDS project has used the second approach. The many advantages of the optical score sheet range from neatness of questionnaire design to large savings in time, errors, and money in generating a computer image of the data. The drawbacks may include some lack of personalization, loss of flexibility in making revisions to the questionnaire, and high initial cost requiring the need for large quantities.

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* The reader is encouraged to review the instrument development information found in the publication: S.J. Franchak and J.E. Spirer, *Guidelines and Practices for Follow-up Studies of Former Vocational Education Students* (Columbus, Ohio: The National Center for Research in Vocational Education, 1978), pp. 36-46.

Pilot Testing Instruments

Regardless of the precautions that are taken to follow all of the good rules of questionnaire or instrument design, chances are near 100 percent that the instrument will contain errors without a pilot test. This is probably the most important step in reducing the inevitable errors that will enter into the initial instrument. In designing a one-year follow-up questionnaire, many studies report that no less than one year of time and the review of many previously used follow-up instruments preceded the final printing on optical scan sheets. To be sure, the final version still contains errors or items that should have been handled differently, but a continuous re-examination will minimize those problems.

Locating Subjects and Maintaining Participation

Conditioning Follow-up Subjects

Since all follow-up studies of vocational graduates will begin when the students are in school, decisions regarding ways to assure access and cooperation after they leave school need to be made at that time. Some type of conditioning of students to expect continued follow-up must be included during in-school contact. Those activities should provide a means for locating the student later and influence the student to respond. For the first purpose, information such as address of parents, name and address of someone who will likely be stable and will know where they are, social security number, etc., must be obtained. Particular problems exist in following up female members of the sample since they will likely experience a name change.

These activities could include providing students with some type of gift while they are still in school, an obvious reminder of the follow-up activity. In the VDS project notebooks monogrammed with the project name were distributed. Birthday cards with address change cards were also sent to the first of the three samples. The staff hypothesized that a birthday card was most likely to be forwarded than a questionnaire. Conditioning activities were also used in various national studies, such as Project TALENT and the National Longitudinal Study of the Class of 1972.

Locating Respondents

Even after all precautions have been taken to condition students for follow-up and information for locating students has been gathered, a number of subjects often cannot be found. In the VDS study, 51 of the 1,197 questionnaires mailed to the first follow-up sample were returned as nondeliverable.

Still, some researchers convinced that with proper measures, initial contacts should not be lost. One often-cited study demonstrates how contacts with 96 percent of the subjects (N=230) of a high school longitudinal survey were maintained over a twenty-year span.[38] These methods included mail, long distance phone calls, community visits, and search of public records. Other longitudinal studies reporting high rates of contact were characterized by one or more of the following: small samples, constant contact, personal interviews, short questionnaires, and/or intensive effort to locate all subjects.

Providing Incentives

In order to increase the rate of return of mailed questionnaires it appears that some type of incentive is useful. In a well-known study of incentives in vocational education follow-up, Pucel, Nelson, and Wheeler experimented with such things as colored paper, free pencil, package of instant coffee, and a pre-letter. Their findings suggest that all incentives had the effect of increasing the return rate. The return rate also increased with the number of incentives used.[39]

In the VDS project incentives included colored paper, a pencil, and a free gift (a key chain embossed with a zodiac sign on one side and the words "VDS PROJECT—PENN STATE—1973" on the other). Also, the questionnaire (in an envelope which was posted with a commemorative wildlife stamp as opposed to a meter or permit stamp), each respondent was qualified for a drawing for a color television, six AM/FM clock radios, and thirty-five tickets to a major league baseball game. The cost of all incentives was approximately one dollar for each person in the sample of twelve hundred. Since the return rate was 67 percent, the cost per return was a little less than two dollars. The return rate in the school using only a postcard follow-up from previous years was reported at 30 percent. Without the free gift and lottery the one-year follow-up in the other two school systems two years later was 59 percent and 50 percent.

While this information provides some basis to judge the effectiveness of incentives, including the cost/benefit ratio, no firm statement on the increased return due to incentive can be made. Another problem which must be considered with incentives is whether or not they have some effect on response bias.

Loss of Subjects Over Time

If the longitudinal study plans to extend over more than two points in time (i.e., one in-school and one out-of-school), the problems of loss of subjects becomes greater. Whenever repeated measures or time-series type studies are planned, the usable sample size can only be as large as the smallest sample. It may even be smaller in the case that some data may be missing from earlier points and present at later points. This problem becomes greater with larger initial samples, when the mail questionnaire is used, and as time from previous or initial contact becomes greater. In fact, if maintaining all subjects in the sample is of paramount importance, then smaller samples, personal or telephone interviews, and short time periods may be a preferable means of keeping the sample intact.

Nonrespondent Bias

Most texts on educational research agree that when nonrespondents exceed 20 percent of the sample, the remaining sample must be suspected of bias. (Unless it can be assumed that not responding or being included in some later stage of a follow-up or longitudinal study is a random occurrence and not systematically related to some of the variables of interest in the study, then some type of bias is likely.) In fact, if one wanted to apply strictly the formula which dictates sample size required to attribute some level of confidence to the data obtained, it is necessary to obtain 100 percent of the sample. Although some very high rates have been reported, very few of the longitudinal studies reviewed for this publication obtained response rates over 80 percent.

Several solutions to this inevitable problem appear in the literature. The most common is to sample randomly the nonrespondents and compare these responses to those of the total sample. Unfortunately, subjects may continue to refuse to respond for whatever reason they did not respond initially. The VDS project attempted a 12 percent random sample (N=46) of the nonrespondents in the one-year follow-up of its first sample. This group was contacted by telephone, at which time the importance of their responses was explained and new questionnaires were mailed to those who needed them. Although it was expected that all or most of this group would then respond, only 28 percent eventually did. Comparing this nonrandom group of nonrespondents to the larger responding group would have been meaningless and was not undertaken.

Most other solutions to the nonrespondent problem focus on ways to assure that the problem doesn't exist. These include the use of incentives, restricting the sample to either a small or a very homogeneous group, limiting the length of the questionnaire, dividing the questionnaire into several smaller parts and administering each part to a part of the sample only, dividing the sample into parts and contracting each subsample at different times over the period of years of the study, and using telephone and personal contact with those who are hard to locate.

Item Nonresponse or Bias

In addition to the problem of nonresponse to an entire questionnaire, there is the problem of nonresponse to particular items or bias due to misunderstanding a particular item. This problem is more likely to occur with certain types of items because they are either difficult to understand or uncomfortable to answer (e.g., salary questions may be skipped more often by those in the extreme salary categories). Even when telephone or interview procedures are used, some subjects may not answer all of the questions. Solutions to this problem include not asking questions most people can't answer, looking for obvious patterns in missing data, and a missing data statistical correction (e.g., substituting the mean for all cases and subtracting a degree of freedom of each case lost).

Data Management

Attempting a longitudinal study without the aid of a computer is virtually inconceivable, yet the literature yields very little information about the issues and problems associated with data processing. To most people the term data processing means using the computer. Actually, it encompasses much more. There are many factors separate from and in addition to the computer which must be considered: instrument handling and scoring, coding of data, converting to computer image, computer analysis, and data layout description. Although many of these considerations are a part of all data-oriented studies, they are inherently more complex when part of a longitudinal study because of the large mass of data and length of time involved.

Instrument Handling and Scoring

Data handling and scoring are treated separately from data coding, which deals only with the physical aspects of moving from the raw form to whatever form the data will need to have for storing and analysis. A scoring service is usually provided at a charge on a per-individual basis for the standardized instrument which is purchased commercially. The scoring service will routinely offer an individualized report or label for school files, but this is of little use for the purpose of longitudinal study. However, by special request it is usually possible to obtain the raw data produced on computer cards or tape as a substitute or an addition to the regular service. For this to be useful for merging with other pieces of data belonging to the same subject, it is necessary to either enter a student number on the optical scanning sheet in some convenient block of boxes, or to add this number to the data cards after they are punched, providing they contain a student name necessary for identification. Another necessary part of this process is an agreed-upon data layout for the card or tape processed by the scoring service. If a questionnaire used in the survey is also printed on an optical scan sheet, much of the above process is also necessary except that the layout and perhaps scoring may be already provided for and the scanning may be accomplished in-house and therefore with better control.

In many cases, the raw data will exist in some paper form and will then be ready for coding and keypunching.

One of the problems with all of this data collection material is that it must be handled physically. That is, it must be moved from the project offices to the subjects or source of data and back to the project office. It must be stored somewhere before and after administration for use as well as during the coding and conversion process. In many cases, it must be stored in raw form indefinitely because of the possible need to return to the original data for recoding or some other unforeseen use. In order not to lose the subject identification for each piece of data, a subject name is necessary on each. In most cases this name identification will need to be matched to a number identification. There should also be convenient places to stack all of the data while they are being processed (i.e., coded, checked, punched). The potential problems that can be created because of a lack of a good physical system cannot be emphasized too strongly. Failure to plan ahead for all of these needs can result in being suddenly overwhelmed with paper which may never get matched up with its owner.

Data Coding

A subset of the data handling and scoring is coding all of the many pieces of raw data in some way that makes them manageable. Typically, this means converting most of them to nominal, ordinal, and interval numbers. In some few cases, the data may be left in an alphanumeric format. Examples of this are subject's name, address, and response to questions about actual occupation and name of employer. Interval data will often result from the use of standardized tests or other naturally continuous information (i.e., age, salary). Ranked data may or may not be present as part of the raw data. In some cases, ranked data will be created by the person doing the coding. A precaution worth mentioning here is always to use the rank "1" to indicate the *lowest* as opposed to the *highest* order. This is necessary in order to avoid negative signs for positive relationships which become confusing to process and explain.

The biggest problem in coding is the area of nominal or categorical data. Much of the data will need to be converted to some categorical system and some thought needs to go into each conversion system in order to avoid problems at a later time. Whenever possible, raw data should not be reduced from some continuous (interval) form to categories, no matter what the planned use. Most computer programs (or programmers) are quite capable of converting continuous data to any other form, but once information is lost through a conversion from the raw data, it can never be retrieved without the costly process of returning to the raw data. The selection of number to represent categories provides the occasion for many problems. For example, the use of zero as a code number for a dichotomous variable (i.e., zero and one) is not advised because zero cannot be added to yield frequencies. Other problems include not leaving enough columns for a variable, choosing ways of identifying missing data, and deciding how to handle all of those "other" categories. Another problem arises when those doing the coding need to make judgments about a category that concerns intercoder (interrater) reliability. In order to achieve sufficient high reliability, those doing the coding need to be trained to work out a rating scheme or model. The only way to be sure of the interrater reliability of coded data is to have at least two coders work independently and then correlate or otherwise compare their two sets of codes.

Converting to Computer Image

In some way or another the raw data need to find their way on the computer. As discussed previously, when standardized tests or other optical scan questionnaires are used, the card or tape image is direct. The second best alternative for conversion is to design the instruments so that the coding system and the columns used on the computer card or tape are printed under the appropriate box. In many cases, the conversion process will entail someone transferring the raw data (questionnaire) to a data layout sheet and then keypunching this sheet onto computer cards which in turn are eventually converted to a computer tape or disk. Throughout this process there are many opportunities for errors. Coding or transposing errors are difficult to detect and the best advice is to take the time necessary not to make them. The punching process can always be counted upon for errors; however, there is one fairly reliable way to detect such errors through what is known as punching verification. This process utilizes a modified keypunch called a verifier on which the same set of data using the same already-punched cards are punched (or actually read) for a second time. In this way, if a punching error has occurred, it would have had to occur twice in exactly the same way in order to escape detection.

Once the data are in card form they can be again checked for errors by using an editing process. In this process, the data are searched and mathematically manipulated in any number of ways which might help to detect what would be suspicious data. (For example, calculate means, standard deviations, and ranges to see if they make sense; use computer "do loops" and "IF" statements to compare observed values to legal values for each variable.)

While all computer calculations can be accomplished from card form, it is desirable, because of the large amount of data and because cards can warp and become unprocessable over time, to convert to tape form. The process of conversion, although technologically now well developed, can and usually does result in many additional problems until the process is complete. One problem is the necessity to have a subject name to ID number matching system for merging all new data with old data on the last piece of data in the tape-building process. The system needs to have been set up at the start of the whole data handling system and used throughout. Once the data are on tape they can no longer be physically seen, and it is not uncommon for the person responsible for such a tape to become paranoid about whether or not the data (which may now be worth millions of dollars) are really on that tape.

Computer Analysis

The problems which are involved in computer analysis from cards or a tape are not unique to longitudinal studies, but are nevertheless painstaking and persistent. No particular details concerning their nature are provided here except to call them to attention and point out the necessity for constant vigilance to be sure that the data are what one thinks they are. Converting from numbers back to the real world is as difficult in some ways as the original conversion.

Data Storage

Once the data are converted to card or tape form, they need to be safely stored for an indefinite period of time. The raw data may also need to be stored because of the possible need to return to it; however, this can soon become an overwhelming physical problem. Cards need to be stored in a humidity-controlled environment to prevent warping and expansion. Because of the nature of longitudinal studies, new data will periodically need to be added to the data set; and for these reasons alone the tape will need to be accessed, merged with new data, printed out to check for errors, and returned to storage. For each analysis, the tape will also need to be mounted and returned to storage. Because of the large amount of data which are likely to accumulate as part of a longitudinal study, the data tape will represent a big investment of time, money, and energy. Because it is possible to erase a complete data tape by simply passing it through a magnetic field (either for that purpose or by accident), it is unwise to have only one copy of the tape. The normal procedure is to have one copy of the tape at the computer center where the work is to be done and an additional copy at some other location.

Data Layout Description

Without a data layout description, all of the numbers on the cards or tape are essentially meaningless. While the data are being collected, scored, coded, and placed on the computer, everyone involved becomes quite conversant with the data and usually manages to retain a surprisingly large and detailed knowledge of what all the numbers mean. However, as time passes and staff members change, this familiarity is lost and the only connection between the data in number form and the real world characteristics the numbers represent is the data layout description. This description needs to be constructed in such a way as to make it possible for anyone having data tape (or cards) to be able to find out everything necessary to understand what the numbers (or occasionally the alphanumeric characters) represent.

A typical format for such a layout is to list the columns which constitute a variable along the lefthand edge of the page, followed by the name of the variable, followed by a complete description of what form (numbers or letters) the variable takes, and what each number represents (e.g., column 10–Sex – 1=Male, 2=Female). In some cases, such as the above example, information is easily presented; however, in many cases a rather lengthy description is necessary in order to make it possible for the reader to know what the scoring or coding system means in terms of the subject's description on a given characteristic. Because the data are usually reduced to numerical quantities and the information has passed from the subject through a series of intermediate interpreters to the eventual user, the possibilities for errors of communication are at least as numerous as in the classical example of miscommunication experienced when a message is whispered down a line of people. The data layout description may exist in notebooks or other printed form, or may be made a part of the data tape in order to keep everything together.

Analysis and Statistical Problems

Type of Analysis

Before problems and issues concerning the analysis of longitudinal data can be discussed, it is first necessary to specify the type of analysis one wishes to undertake. The choice of analyses must be considered early in the study because it is intrinsically tied to the sampling strategy, the data collected, and the points in time selected for study. In reviewing the literature on longitudinal research design and appropriate analyses, one encounters such designs as time-series studies, multiple linear regression analysis, commonality analysis, path analysis, cross-lagged panel correlations, autoregressive integrated moving average models, analysis of covariance, cohort sequential designs, time-sequential designs, cross-sequential designs, curvilinear regression analysis, and polynomial trend fitting. Many other simple and complex designs could be included here. In fact, if one views longitudinal data simply as a series of data points over time which are the summations of individual scores at each point, then any type of analysis utilizing one or more points is possible. In many cases, the plot of data points on one variable for all subjects over time yielding a visual curve can be the most meaningful analysis. In the case of vocational follow-up studies, some of the simplest and most useful analyses for two-points-in-time data (e.g., an in-school measure of curriculum and an out-of-school measure of success on the job) would be t-tests or simple correlations. However, since longitudinal studies of the type possible in vocational education include so many uncontrolled variables which might confound the variable of interest, it is usually necessary or at least useful to employ more sophisticated designs which at least attempt to study or account for such effects in some way.

It would be impossible in a publication of this length to discuss all of the problems and issues one could encounter in employing all of the possible designs and statistical analyses useful in longitudinal designs and analyses, at least some of these are discussed further here.*

Change Scores

Whenever two observations over time are obtained on one variable, the possibility of a change from T1 to T2 exists. A change score results from the subtraction of an individual score obtained at T1 from that obtained at T2. Since many longitudinal studies are primarily interested in this type of change, it appears entirely reasonable to calculate such scores. The biggest problem with such scores is the fact that they are usually highly unreliable. This is because a change score contains all of the error variance present in the T1 score plus the error variance present in the T2 score. Therefore, whenever the variable of interest in the type of measure which is likely to be of low reliability (e.g., attitude), the resulting change score is doubly unreliable. Trying to relate or attribute such a score to some independent variable (e.g., vocational program) is extremely risky. When group (as opposed to individual) data are used, this problem disappears because error, being random, cancels itself out when aggregated.

A second problem with change scores is their tendency to be negatively correlated with the pre or T1 score. This occurs because the subjects with the lowest scores are those most likely to change. (This can be due to either regression effect or because there is more room for change.) The employment of analysis of covariance (when all of the assumptions are met) using the pre or T1 score as the covariate is probably the best way to handle change, but some of the problems are still present. (For further information on change scores see Nunnally—chapter 5 in Nesselroade and Reese, 1973; Wohlwill, 1973; and Morell—chapter 9 in Abramson, Tittle, and Cohen, 1979.)

Test-Retest Effect

In general, this problem arises from subjects being repeatedly measured either with the same measure or as part of the same study over time. In the case where the same measure is applied over several times, it is difficult to know if changes which occur are the result of any treatment or normal development, or simply the effect of learning about the measure. Even when different measures or data are collected over time, the cumulative effect to exposure to being measured or followed-up could have an effect. This effect depends on the variables involved, and some variables (e.g., attitude) are more likely to be affected than others (e.g., salary). According to Campbell and Stanley, there are several threats to validity that could be involved here: testing, instrumentation, or the interaction between testing and treatment.[40]

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* The reader is encouraged to review the Sage University Paper Series on Quantitative Applications in the Social Sciences (1978-1979). This series of methodological works provides introductory discussions and demonstrations of various data analysis techniques applicable to longitudinal studies. In particular the following documents are recommended: 1) *Cohort Analysis* by Norval D. Glenn, 2) *Time Series Analysis: Regression Techniques* by Charles W. Ostrom, Jr., 3) *Ecological Inference* by Laura Irwin Langbein and Allan J. Lichtman, 4) *Multiple Indicators: An Introduction* by John L. Sullivan and Stanley Feldman, 5) *Exploratory Data Analysis* by Frederick Hartwig with Brian E. Dearing, 6) *Analyzing Panel Data* by Gregory B. Markus.

The Hawthorne effect is also a possibility here. One of the ways in which this type of effect can at least be observed or measured, if not corrected, is to match cross-sectional and longitudinal designs for the same cohort and examine the changes that appear over time longitudinally with changes that occur over samples cross-sectionally. (For further information on this problem, see Wohlwill, 1973.)

Analysis of Covariance

For several reasons, analysis of covariance is a necessary and useful tool in longitudinal research. These reasons include: correction for nonequivalent groups on one or more variables (covariates), increasing the power of a design by eliminating extraneous sources of variance, and assessing change or gain by using the pretest as a covariate (as opposed to using gain or change scores). Although problems exist in using any statistics (i.e., through the violation of assumptions), analysis of covariance (ANCOVA) is particularly sensitive to distortions resulting from the violations of assumptions and measurement error. The most widely discussed of these problems is that associated with the assumption of homogeneity of regression. That is, that the correlation between the covariate and the dependent variable is equal for all groups. When this is not the case, the adjustment in the dependent variable will be biased in either direction (e.g., program effect may be overestimated or underestimated). A second and less obvious problem with ANCOVA is that resulting from random measurement error in the covariate (or pretest). This condition results in an under-adjustment in the dependent variable and can easily lead to spurious results. (For further discussion of these and other problems with ANCOVA, see Cook and Campbell, 1979.)

Multiple Regression Analysis

Probably the most used form of statistical analysis with longitudinal data is some type of linear model or multiple regression analysis (MRA). Within this category of analysis are included not only the single equation MRA which can be used as an analysis of variance (ANOVA) or an analysis of covariance (ANCOVA), but also more complex configurations such as commonality analysis (CA) and path analysis (PA).* The concept of CA as discussed by Cooley and Hohnes is based on the construction of all meaningful structural equations or regressions within an evaluation model to examine the patterning of unique and shared variance among the variables.[41] A third approach to using MRA is that of path analysis (PA), which allows for the decomposition of the MRA into direct and indirect effects, thus allowing for better examination of causal inferences. Examples of some of these MRA approaches with longitudinal studies in vocational education evaluation can be seen in the works of Moss (1968), Kaufman et al. (1967), Kapes et al. (1974), and Currey et al. (1975).

The problems associated with the use of MRA are similar to those involved with the use of any complex statistical procedure. However, several of these problems that are common to all three of the above-described MRA approaches stem from the way in which variables are either added to or taken from the various models. Depending on this order and the relationship or correlations among the variables, conclusions reached concerning the unique contributions of any of the variables can change drastically. A good example of this is the problem caused by multicollinearity, a high degree of correlation among the independent variables. An illustration of the problem can be seen when two independent variables are highly related (e.g., father's occupational level and father's educational level) and both of these variables together account for a large part of the variance in the dependent variable (e.g., student's occupational aspiration). When the partial regression coefficients for each independent variable are tested for significance, they are found to be nonsignificant, leading to the ridiculous conclusion that although father's occupational and educational level together are powerful predictors of student's occupational aspiration level, neither of them individually are significant predictors. (For further discussion of multicollinearity, see Asher, 1976, p. 48.)

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* For a succinct introduction to multivariate statistical methods, the reader is referred to: M.M. Tatsuoka, "Multivariate Analysis in Educational Research," in *Review of Research in Education*, ed. F.N. Kerlinger (Itasca, Illinois: F.E. Peacock, 1973), pp. 273-319.

A particular problem with the use of MRA models with time-series or repeated measures type studies is that of autocorrelation, a correlation among residuals or error terms. Autocorrelation occurs because events in time tend to be more highly correlated over shorter periods of time than over longer periods of time. This results in correlated as opposed to independent error terms as required in MRA. When autocorrelation is present, the standard errors used to calculate significance are biased downward, resulting in inflated findings of significance. The recommended solution to this problem is to use the relatively new autoregressive integrated moving average (ARIMA) models. (See Cook and Campbell, 1976, Chapter 6.)

Measurement Error

Although error is a problem in all types of research, it is particularly troublesome in any research which involves many variables or repeated measurement with the same variable. When measurement error is random, its result is unreliability of the measures involved. The problem of unreliability does not result in any systematic bias except that it causes all relationships to be attenuated or underestimated (i.e., the estimate of relationship is conservative). While corrections for attenuation are possible, they become difficult when a multivariate analysis is involved. When random error is likely to be present, one method of handling it is to aggregate the data into some meaningful groups (e.g., classes). In this way random error, by definition, will cancel itself out, resulting in more stable scores. This solution, however, also sacrifices something in loss of opportunity to examine covariance at the individual level.

An even more serious problem of measurement error is that which is nonrandom. Errors of this type result in invalidity because they systematically bias a measure either upward or downward. In longitudinal or time-series studies the bias may be present at some data points and not at others, thereby injecting a confounding factor which might be interpreted as a change or effect.

Confounding Variables

The very fact that a study is being conducted over time raises the possibility of a number of confounding factors which are concomitant with time. These include age and time interactions, time of measurement effects, age effects, cohort effects, and developmental or maturational effects. No statistical treatment of longitudinal data can remove or isolate these effects. A possible solution to these problems is the use of simultaneous longitudinal and cross-sectional designs such as the three-factor model proposed by Schaie which differentiates between cohort-sequential, time-sequential, and cross-sequential designs. (For further information see Wohlwill, 1973, Chapter 7.)

Administration and Management Problems

Financial Problems

The category of financial problems can itself be broken down into at least two subcategories: (1) those dealing with the problems of getting funding over a long period of time, and (2) those dealing with the various cost considerations involved in conducting such a study. Although any person or organization involved in educational research faces the problem of writing proposals, usually on a year-by-year basis, to get the funds necessary to operate, this problem is much more apparent when the project is a longitudinal study. The problem results from the fact that a large amount of money needs to be committed over a relatively long period of time (e.g., ten or twenty years) in order to be sure the project can be completed. Furthermore, a considerable amount of that money needs to be spent before any return for the investment is realized. Although monies for research in vocational education became available as a result of the Vocational Education Act of 1963 and subsequent amendments, that money has usually had conditions attached that make funding a longitudinal study over more than three years in length difficult, if not impossible. Although the VDS project was able to secure funds between the fall of 1968, when the first data were collected, through the spring of 1976, when the last of the dissemination activities was completed, money for the planned four- to seven-year follow-up after graduation has not been forthcoming. Several attempts to secure such funds were unsuccessful.

The second concern is how to spend available funds most effectively. The following types of questions must be answered: How much should be spent on incentives? What is it worth to improve the quality of the data collection instruments? How should staff funds be spent (e.g., on more lower-salaried graduation assistants or fewer higher-salaried trained professionals)? Should supplies be ordered in larger quantities for use in future years at a per-unit savings? Should more costly interview methods be used to increase return rate? Is the cost of verifying the keypunching (at twice the cost) worth the reduction in errors?*

Personnel and Location Problems

Again, as is the case with funding, all research activity needs answers to the questions concerning who will conduct the research and where the research will be housed, administratively and physically. These questions take on added significance in the case of longitudinal studies because they must be answered satisfactorily for such a long period of time. Not many people or institutions can make the kind of commitment necessary to conduct a ten- or twenty-year study. When this problem is considered along with the funding problem, it appears that fewer still would be wise to make such a commitment. However, in order for such a study even to get started, either an institution or a person (and preferably both) need to sponsor it with the commitment to finish.

Those few notable longitudinal studies which have survived were sponsored by both individuals and institutions. For example, the *Career Pattern Study* (CPS) had the commitment of Donald Super and Columbia University Teachers College; *Project TALENT,* the Department of Health, Education and Welfare, the American Institute for Research (AIR), and John Flanagan for support; *Youth in Transition* has had Jerald Bachman and the University of Michigan, Institute for Social Research (ISR); the *National Longitudinal Surveys* (NLS) have had the Center for Human Resource Research at Ohio State, Department of Labor, and Herbert Parnes; and the *Longitudinal Study of Educational Effects* has the support of HEW and the National Center for Educational Statistics to back it up. The VDS project is an example of a longitudinal study without the necessary long-term support of either money, institution, or people, although those who initiated the project had, perhaps naively, believed it could be completed. The California SLS is an example where sponsorship by both individuals and institutions is very important in the success and survival of a longitudinal effort.

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* The reader is encouraged to review the publication: *Guidelines and Practices for Follow-up Studies* by S.J. Franchak and J.E. Spirer, pp. 101-104.

Even when the funds and a long-term personal and institutional commitment are present, there still are many year-to-year problems, including the turnover of key personnel, the hiring and training of short-term and part-time workers (this training may be extensive because of the need for uniformity of procedure or precision required of certain tasks), the physical storing and/or moving of records, addresses, and phone number changes of office staff, and the possible loss of stamina and interest of all involved.

Public Relations and Communications

Regardless of the point at which the data collection is started for a longitudinal study, there is a need to spend a considerable amount of time in public relations and communication activities with school personnel as well as the students involved in the study. Neglecting this activity could result in a loss of a great deal of data and perhaps the entire study. Public relations and communication activities are important because the students, in school, and the community can only measure the significance of the study through the statements, attitudes, and demeanor of the research staff.

If extensive data are to be collected while the students are in school, students and key school personnel must feel positively toward those who are spending so much time disrupting the normal school schedule. It may even be necessary to follow the provisions of the Family Educational Rights and Privacy Act of 1974 (the Buckley Amendment) and obtain written consent of the parents. In this case, the slightest amount of bad publicity can virtually ruin the sample through refusals to participate.

Even after the sample has graduated, the predisposition of the students and their parents toward the study will likely affect the cooperation necessary to collect continual follow-up data. All public statements, both written and verbal, as well as off-the-cuff personal statements, need to be considered in light of their potential public relations effect. No school or community person should be considered too unimportant to be given proper respect. An example from the VDS project will help to make the point here.

During the first year of data collection at one of three schools, project staff members spoke with a cafeteria worker (instruments were administered to groups using the school cafeteria) who had overheard the directions for filling out a biographical information sheet which contained some questions about family background. The cafeteria worker expressed some misgivings about both the propriety of such personal questions and the staff member's beard. (The school dress code prohibited beards for both students and school personnel.) The discussion was amicable and presumed harmless. As it turned out, the cafeteria worker later expressed her concern in a phone call to the local "Open Mike" radio program and soon the whole community was raising questions about the research activity. An emergency meeting of the school board was called and the project staff found itself providing considerable explanation in order to salvage the study.

Dissemination of Research Results

Although all research projects have the problem of finding a way to report the results to at least the funding agency, longitudinal studies have one additional problem. That is, for the most part they do not file final reports since the research is almost never final. Given the long term over which data is analyzed, there is need for a mechanism for some type of periodic reporting system. Furthermore, the reporting process needs to be tied in with requests for further data collection (e.g., a newsletter to participants). In order to be able to handle all of these needs, it is wise for the project staff to set up a diversified and coordinated dissemination system at the start of the study. This system should include:

1. Computerized mailing lists
2. A system to add and change addresses
3. An approach to publishing brief and attractive summaries
4. A format for interim reports
5. A policy concerning conference papers and journal articles
6. A printing process arrangement
7. A news release format and procedure
8. A catalogue of standard replies to requests for reports and information

The longer the period of time over which the longitudinal study will run, the more important it is that the system is set up initially.

Several examples of dissemination activities undertaken as part of the VDS study may be helpful here. Since the study was designed to run approximately ten years, it was immediately decided to separate the reporting of particular project studies from reports required by the funding agent. In order to do this, a separate monograph series, *Vocational Development Study Series*, was published with monographs eventually membering through twenty-one. The monograph cover and format were of a standard design which could be used for all reports. A printing service was arranged to handle all printing. It was evident by the time the third monograph was produced that a mailing list which could be easily added to and which could generate labels for mailing was needed. It also became evident that while many individuals were receiving the monographs, few were reading them. For this reason, a small, two- to four-page summary printed on blue paper to attract the reader was added to the beginning of each monograph. As the project progressed, this notion of blue pages was extended into a monthly newsletter which reported a single aspect of the one-year follow-up and was published throughout the year with a different color for each month. The California SLS provides newsletters and the annual reports to supporting members and relevant others. Formats are adopted to the needs of the individual groups.

Summary

Basic strategies and procedures for designing, planning, and conducting longitudinal studies of former vocational students require attention to detail and adherence to the canons of research and evaluation. The identification of content for this chapter was developed from the results of previous longitudinal efforts, recognized research and evaluation literature, personal experience—one author's experience with the Pennsylvania Vocational Develop Study (VDS), and another author's experience with the Statewide Longitudinal Study for the California Community Colleges (SLS)—and information obtained from state and local vocational educators.

Specifications for longitudinal studies must meet minimum criteria to achieve the high quality necessary to make them useful. Borrowing from commonly used criteria for evaluations in general, one undertaking longitudinal efforts must strive to develop specifications which have a high level of objectivity, relevance, reliability, significance, validity, and timeliness.

APPENDIX

Introduction

The Appendix contains examples of instruments used for longitudinal studies in vocational education at both the secondary and postsecondary levels. The first example presents a set (one-, three-, five-, and seven-year) of follow-up instruments used in a comprehensive high school. The second example is a one-year follow-up which was to be used in subsequent follow-ups on a longitudinal basis. In addition, as defined in the text, the Vocational Development Study (VDS) used an extensive assortment of inventories and tests in collecting data as students progressed in school from grades nine through twelve. This study involved samples of students from three school districts. Students in both the comprehensive high school and secondary area vocational schools comprised the population.

The third example represents a list of questions used in longitudinal instruments for the California Community College Statewide Longitudinal Study. Reference to this study is found in Chapter III, which highlights certain strategies and procedures for longitudinal studies.

The final example contains instruments developed by the Tex-SIS Support Services for the follow-up of the Texas community college students. The instrument package contains one-, three-, and five-year follow-up instruments. Other instruments in the longitudinal follow-up package include:

- a non-returning student follow-up
- an employer follow-up
- an adult and continuing education follow-up.

FOLLOW-UP SURVEY OF GRADUATES

By answering the following questions you can help us to plan better educational programs for present high school students. The information you return will be used for educational purposes only. Thank you for your cooperation and assistance in completing this survey. Your name will not be released or otherwise connected with the information you provide.

PLEASE ANSWER THE ITEMS IN THIS SURVEY BY PLACING AN "X" IN THE BOX NEXT TO THE RESPONSE OF YOUR CHOICE.

No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

(First Name First Please) NAME ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

PRESENT MARITAL STATUS: (Check One) 1.☐ Single 2.☐ Married 3.☐ Divorced 4.☐ Separated

IF MARRIED, PLEASE GIVE MAIDEN NAME ☐☐☐☐☐☐☐☐☐☐☐☐☐☐
38 39 40 41 42 43 44 45 46 47 48 49 50 51

AND WIFE OR HUSBAND'S NAME ☐☐☐☐☐☐☐☐☐☐☐☐☐
52 53 54 55 56 57 58 59 60 61

(Number and Name)

STREET ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83

[illegible]

City ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ State ☐☐ Zip Code ☐☐☐☐☐
84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 / 99 100 / 101 102 103 104 105

Area Code

PHONE NUMBER ☐☐☐ ☐☐☐ ☐☐☐☐ Graduate of (Check One) 16
106 107 108 109 110 111 112 113 114 115

☐ Alma ☐ Ashley 1 ☐ Beal City 2 ☐ Breckenridge 3 ☐ Fulton 4

☐ Ithaca 5 ☐ Mt. Pleasant 6 ☐ Sacred Heart 7 ☐ St. Louis 8 ☐ Shepherd 9

Check the word that best describes the training you received at the Area Center:
17. 1. ☐ Very Good 2. ☐ Good 3. ☐ Average 4. ☐ Poor

The classes you took at the Area Center were your (Check One):
21. 1 ☐ 1st Choice 2 ☐ 2nd Choice 3 ☐ 3rd Choice

The occupational counseling you received at the Area Center was (Check One):
22. 1. ☐ Very Helpful 2. ☐ Helpful 3. ☐ No Help 4. ☐ Received None

The instruction you received at the Area Center (Check One):
23. 1. ☐ Needed more lab 2. ☐ Needed more theory 3. ☐ Both were adequate
4. ☐ Needed more lab and theory

How much contact have you had with the Center since graduation? (Check One)
24. 1 ☐ Some 2. ☐ None

Which of the following statements describes your present status?
25. I am now employed: 2. ☐ Full time (30 hrs. + wk.) 3. ☐ Part Time (Less than 30 hrs)
4. ☐ I am not now employed 6. ☐ Graduate has deceased

Office Use Only ☐ S.U.
1.

29. 1. ☐ I am a homemaker

33. 1. ☐ I am looking for a job
2. ☐ I am not looking for a job

Source: M. Oberlander, Mt. Pleasant Schools Longitudinal Follow-up Studies. (Mt. Pleasant, Michigan: Mt. Pleasant Public Schools, 1979).

34. I am/will be/have been in the Military Service (by January 1978. Which branch?)
1. ☐ Army 2. ☐ Navy 3. ☐ Air Force 4. ☐ National Guard
5. ☐ Coast Guard 6. ☐ Marines 7. ☐ Reserves 8. ☐ Veteran

35. 1. ☐ I am a full time student (12 hrs. or more)
2. ☐ I am a part time student (Less than 12 hrs.)

PART 2 - EMPLOYED
DIRECTIONS

IF YOU ARE EMPLOYED FULL OR PART TIME NOW, OR IF YOU ARE IN THE MILITARY, PLEASE COMPLETE THIS PART OF THE SURVEY. OTHERWISE GO DIRECTLY TO PART 3, UNEMPLOYED - SEEKING WORK.

Name of Employer: ☐☐☐☐☐☐☐☐☐☐ ☐☐☐☐☐
36 37 38 39 40 41 42 43 44 45 Office use only

____
City State Zip Code

County: (Check One) 46. 1. ☐ Isabella 2. ☐ Gratiot 3. ☐ Clare 4. ☐ Mecosta
5. ☐ Midland 6. ☐ Saginaw 7. ☐ Other in State 8. ☐ Other out State

Job Title: ____

In relation to the classes I took at the Area Center, my job is: (Check One)
50. 1. ☐ Directly Related 2. ☐ Somewhat Related 3. ☐ Not Related

In addition to training you, what did your Area Center do to HELP you FIND a job? (Check ALL that apply)
54. 1. ☐ Told me about job openings
55. 1. ☐ Sent me for an interview
56. 1. ☐ Taught me to fill out a job application
57. 1. ☐ Gave information about me to my employer
58. 1. ☐ Other (Please Specify) ______________________________
59. 1. ☐ None of the above

Who helped you to find a job? (Check ALL that apply)
60. 1. ☐ Area Center Counselor
61. 1. ☐ Teacher or co-op coordinator
62. 1. ☐ Parent, other relative or friend
63. 1. ☐ Area Center Placement Office
64. 1. ☐ Public employment agency
65. 1. ☐ Private employment agency
66. 1. ☐ College placement office
67. 1. ☐ Other (Please Specify) ______________________________
68. 1. ☐ No one but myself

On your present job, how well did your Area Center program train you to work with your supervisor?
69. 1. ☐ Very Good 2. ☐ Good 3. ☐ Average 4. ☐ Poor

How long have you been working for your present employer since graduation?
70. ☐ 6 mo. 1. ☐ 1 yr. 2. ☐ 2 yr. 3. ☐ 3 yr. 4. ☐ 4 yr.
5. ☐ 5 yr. 6. ☐ 6 yr. 7. ☐ 7 yr.

On your present job, how much do you use the vocational training you received at the Area Vocational Education Center?
74. 1. ☐ A lot 2. ☐ Some 3. ☐ Hardly any 4. ☐ None

Overall, how satisfied are you with your present job? (Check ONE Only)
78. 1. ☐ Very satisfied 2. ☐ Somewhat satisfied 3. ☐ Not very satisfied
4. ☐ Not at all satisfied

On my present job I am paid about ________ per hour.

PART 3 - UNEMPLOYED - SEEKING WORK
DIRECTIONS

IF YOU ARE PRESENTLY UNEMPLOYED AND ARE LOOKING FOR A JOB, COMPLETE THIS PART OF THE SURVEY. OTHERWISE, GO DIRECTLY TO PART 4 - FURTHER EDUCATION.

Who have you asked for help in finding a job? (Check ALL that apply)

☐ Area Center Counselor
☐ Teacher or co-op coordinator
☐ Parent, other relative or friend
☐ Area Center Placement Office
☐ Public employment agency
☐ Private employment agency
☐ College placement office
☐ Other (Please specify) ____________________
☐ None of the above

PART 4 - FURTHER EDUCATION
DIRECTIONS

IF YOU ARE NOW ATTENDING SCHOOL OR ARE ENROLLED IN A TRAINING OR APPRENTICESHIP PROGRAM, PLEASE COMPLETE THIS PART OF THE SURVEY. OTHERWISE, GO DIRECTLY TO PART 5 COMMENTS.

Name of School, Training, or Apprentice program: ____________________

____________________ City ____________________ State ☐☐☐☐☐ 98 99 100 101 102

104. I am enrolled in a : 1. ☐ 6 mo. 5. ☐ One year 2. ☐ Two year
3. ☐ Four year 6. ☐ Five year 7. ☐ Undecided . . . . program.

105. Have you graduated? 1. ☐ Yes 2. ☐ No

106. Are you still attending? 3. ☐ Yes ☐ No

My major area of training is: ____________________

107. In relation to the classes I took at the Area Center, my major area of training or study is: (Check One)
1. ☐ Directly Related 2. ☐ Somewhat Related 3. ☐ Not Related

107. In your major area of study or training, how much do you use the vocational training you received at the Area Center?
☐ A lot ☐ Some ☐ Hardly Any ☐ None

Check ALL who assisted you in finding and/or getting your present educational program.

☐ Area Center Counselor
☐ Teacher or co-op coordinator
☐ Parent, other relative or friend
☐ Area Center Placement Office
☐ Training or apprentice program recruiter
☐ Other (Please specify) ____________________
☐ No one but myself

GO TO PART 5

PART 5 — COMMENTS

Comments and/or Suggestions:

SCHOOL USE ONLY

1.
64 ☐ 1
☐ 2

If an AREA CENTER, report student's home district identification.

CEPD	CODE

73

2. O. E. Code ___ ___ . ___ ___ ___ ___

Name of Program ____________

Information obtained by telephone contact ☐

3.
71 ☐ 1
☐ 2

4.
72 ☐ 1
☐ 2

YEAR OF FOLLOW-UP 3 ☐ 5 ☐ 7 ☐

FOLLOW-UP SURVEY OF GRADUATES

By answering the following questions you can help us to plan better educational programs for present high school students. The information you return will be used for educational purposes only. Thank you for your cooperation and assistance in completing this survey. Your name will not be released or otherwise connected with the information you provide.

PLEASE ANSWER THE ITEMS IN THIS SURVEY BY PLACING AN "X" IN THE BOX NEXT TO THE RESPONSE OF YOUR CHOICE.

NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐
1 2 3 4 5 6 7 8 9 10 11 12 13 14

PART I

DIRECTIONS: EVERYONE SHOULD COMPLETE PART I

First Name ☐☐☐☐☐☐☐ Middle Initial ☐ Last Name ☐☐☐☐☐☐☐☐☐☐☐☐☐☐
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37

Present Marital Status: (Check One) 15 ☐ Single ☐ Married ☐ Divorced ☐ Seperated
1 2 3 4

If married, please give maiden name ☐☐☐☐☐☐☐☐☐☐☐☐☐☐
38 39 40 41 42 43 44 45 46 47 48 49 50 51

and wife or husband's name ☐☐☐☐☐☐☐☐☐☐
52 53 54 55 56 57 58 59 60 61

Street Number (No Route No.) ☐☐☐☐☐☐ Street Name (Please write Street Name & Apt. or Lot No.) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
62

City ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐ State ☐☐ Zip Code ☐☐☐☐☐
84

Phone Number Area Code ☐☐☐☐☐☐☐☐☐☐
106

Graduate of: (Check One) 16

- ☐ Alma
1 ☐ Ashley
2 ☐ Beal City
3 ☐ Breckenridge
4 ☐ Fulton
5 ☐ Ithaca
6 ☐ Mt. Pleasant
7 ☐ Sacred Heart
8 ☐ St. Louis
9 ☐ Shepherd

18–20 Check the word that best describes the training you received at the Area Center:

1 ☐ Very Good 2 ☐ Good 3 ☐ Average 4 ☐ Poor

26–28 Which of the following statements describes your present status? (Check all that apply)

2 ☐ Employed Full Time (30 hrs. +)
4 ☐ Not employed
3 ☐ Employed Part Time (Less than 30 hrs.)
8 ☐ The graduate has deceased

29 1 ☐ I am a homemaker
1 ☐ S.U. (OFFICE USE ONLY)

33 { 1 ☐ I am looking for a job
2 ☐ I am not looking for a job

34 I am/will be/have been in the Military Service (by January 1979). Which branch?

1 ☐ Army 2 ☐ Navy 3 ☐ Air Force 4 ☐ National Guard
5 ☐ Coast Guard 6 ☐ Marines 7 ☐ Reserves 8 ☐ Vetern

35 { 1 ☐ I am a full time student
2 ☐ I am a part time student

Source: M. Oberlander, (Mt. Pleasant Public Schools, 1979).

PART 2—EMPLOYED
DIRECTIONS FOR PART 2

IF YOU ARE EMPLOYED FULL OR PART TIME NOW, OR IF YOU ARE IN THE MILITARY, PLEASE COMPLETE THIS PART OF THE SURVEY. OTHERWISE GO DIRECTLY TO PART 3, FURTHER EDUCATION.

Name of Company: ______________________________

____
City State Zip Code

47-49 County: (Check One) 1 ☐ Isabella 2 ☐ Gratiot 3 ☐ Clare 4 ☐ Mecosta
5 ☐ Midland 6 ☐ Saginaw 7 ☐ Other in state 8 ☐ Other not state

Job Title: ______________________________

51-53 In relation to the classes I took at the Area Center, my job is: (Check One)
1 ☐ Directly Related 2 ☐ Somewhat Related 3 ☐ Not Related

71-73 How long have you been working for your present employer since graduation?
☐ 6 mo. 1 ☐ 1 yr. 2 ☐ 2 yrs. 3 ☐ 3 yrs. 4 ☐ 4 yrs.
5 ☐ 5 yrs. 6 ☐ 6 yrs. 7 ☐ 7 yrs.

75-77 On your present job, how much do you use the vocational training you received at the Area Vocational Education Center?
1 ☐ A lot 2 ☐ Some 3 ☐ Hardly any 4 ☐ None

79-81 Overall, how satisfied are you with your present job? (Check ONE Only)
1 ☐ Very Satisfied 2 ☐ Somewhat Satisfied 3 ☐ Not Very Satisfied
4 ☐ Not At All Satisfied

86-97 On my present job I am paid about ________ per hour.

PART 3—FURTHER EDUCATION
DIRECTIONS FOR PART 3

IF YOU ARE NOW ATTENDING SCHOOL OR ARE ENROLLED IN A TRAINING OR APPRENTICESHIP PROGRAM, PLEASE COMPLETE THIS PART OF THE SURVEY. OTHERWISE, GO DIRECTLY TO PART 4—COMMENTS.

Name of School, Training, or Apprenticeship program: ______________________________

____
City State

OFFICE USE ONLY
☐ 98 ☐ 99 ☐ 100 ☐ 101 ☐ 102

104 I am enrolled in a: 1 ☐ 6 mo. 5 ☐ One year 2 ☐ Two year
3 ☐ Four year 6 ☐ Five year 7 ☐ Undecided........program.

105 Have you graduated? 1 ☐ Yes 2 ☐ No

106 Are you still attending? 1 ☐ Yes 2 ☐ No
My major area of training is: ______________________________

107 In relation to the classes I took at the Area Center, my major area of training or study is: (Check One)
1 ☐ Directly Related 2 ☐ Somewhat Related 3 ☐ Not Related

PART 4—COMMENTS

ANY COMMENTS OR SUGGESTIONS YOU MAY AHVE CAN BE WRITTEN EITHER IN THE SPACE BELOW OR YOU MAY ENCLOSE ANOTHER SHEET. INCLUDE ANY TYPE OF ASSITANCE YOU MIGHT NEED NOW OR THINGS YOU WOULD HAVE LIKED TO HAVE HAD IN YOUR HIGH SCHOOL PROGRAM.

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DO NOT WRITE IN THIS SPACE.

[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

1. NAME ______ LAST ______ FIRST ______ M.I. ______ MAIDEN (IF APPLICABLE) ______ SOCIAL SECURITY NUMBER ___ ___ ___ – ___ ___ – ___ ___ ___ ___

CURRENT MAILING ADDRESS (if different from address on envelope of this letter).
______ STREET ______ CITY ______ STATE ______ ZIP

2. DO YOU LIVE WITH A PARENT OR GUARDIAN?
- ☐ YES
- ☐ NO

3. MARITAL STATUS:
- ☐ SINGLE
- ☐ MARRIED
- ☐ DIVORCED

4. GRADES ATTENDED IN THE SCHOOL SYSTEM WHERE YOU ATTENDED HIGH SCHOOL.
- ☐ ALL 12 GRADES
- ☐ ONLY HIGH SCHOOL
- ☐ HIGH SCHOOL PLUS SOME GRADE SCHOOL

5. INDICATE YOUR HIGH SCHOOL GRADUATION STATUS:
- ☐ GRADUATED IN JUNE
- ☐ GRADUATED SINCE JUNE
- ☐ RECEIVED HIGH SCHOOL EQUIVALENCY DIPLOMA
- ☐ HAVE NOT YET RECEIVED A HIGH SCHOOL DIPLOMA

6. PLEASE MARK YOUR PRESENT OCCUPATIONAL STATUS. DO NOT MARK MORE THAN ONE BOX.
- ☐ EMPLOYED FULL-TIME
- ☐ EMPLOYED PART-TIME
- ☐ UNEMPLOYED, LOOKING FOR WORK
- ☐ UNEMPLOYED, NOT LOOKING FOR WORK
- ☐ MILITARY
- ☐ HOUSEWIFE
- ☐ OTHER, EXPLAIN: ______

7. PLEASE MARK YOUR PRESENT EDUCATIONAL STATUS. DO NOT MARK MORE THAN ONE BOX.
- ☐ SCHOOL OR COLLEGE, FULL-TIME
- ☐ SCHOOL OR COLLEGE, PART-TIME
- ☐ NOT GOING TO ANY SCHOOL OR COLLEGE
- ☐ OTHER, EXPLAIN: ______

8. WHAT VOCATION OR PROFESSION WOULD YOU LIKE MOST TO FOLLOW?

9. WHAT VOCATION OR PROFESSION ARE YOU MOST LIKELY TO FOLLOW?

10. I WOULD DESCRIBE MYSELF AS:
- ☐ LIBERAL
- ☐ CONSERVATIVE
- ☐ MODERATE OR MIDDLE OF THE ROAD
- ☐ NOT INTERESTED IN POLITICS

11. DID YOU VOTE IN THE LAST ELECTION?
- ☐ YES
- ☐ NO
- ☐ WAS UNDER 18

12. INDICATE HOW YOU FEEL ABOUT THE FOLLOWING STATEMENTS IN TERMS OF THE INSTITUTIONS MENTIONED. RESPOND IN THE FOLLOWING MANNER:

1=STRONGLY DISAGREE
2=DISAGREE
3=NEUTRAL
4=AGREE
5=STRONGLY AGREE

[1] [2] [3] [4] [5]	I AM PROUD OF MY HIGH SCHOOL.
[1] [2] [3] [4] [5]	IT IS IMPORTANT FOR MY HIGH SCHOOL TO HAVE A WINNING FOOTBALL TEAM.
[1] [2] [3] [4] [5]	I AM PROUD OF MY HOMETOWN.
[1] [2] [3] [4] [5]	MY HIGH SCHOOL TEACHERS HAVE DONE A GOOD JOB.
[1] [2] [3] [4] [5]	MY HIGH SCHOOL GUIDANCE PROGRAM HAS DONE A GOOD JOB.

13. INDICATE HOW YOU FEEL ABOUT THE FOLLOWING STATEMENTS IN TERMS OF YOUR POLITICAL VIEWS. RESPOND IN THE SAME MANNER AS ABOVE.

[1] [2] [3] [4] [5]	KEEPING INFORMED OF CURRENT EVENTS IS IMPORTANT FOR RESPONSIBLE VOTING.
[1] [2] [3] [4] [5]	VOTING IS A RESPONSIBILITY.
[1] [2] [3] [4] [5]	PEOPLE IN GOVERNMENT ARE BASICALLY HONEST.
[1] [2] [3] [4] [5]	I AM PROUD TO BE AN AMERICAN.
[1] [2] [3] [4] [5]	COURTS ARE TOO SOFT ON THOSE WHO BREAK THE LAW.
[1] [2] [3] [4] [5]	CITIZENS SHOULD BE ACTIVE IN LOCAL POLITICS.
[1] [2] [3] [4] [5]	LABOR UNIONS ARE IMPORTANT TO THE WORKING MAN.

14. IN YOUR OPINION HOW IMPORTANT IS EACH OF THE FOLLOWING REASONS FOR WORKING AT A PARTICULAR JOB.

1=UNIMPORTANT
2=OF LITTLE IMPORTANCE
3=MODERATELY IMPORTANT
4=IMPORTANT
5=VERY IMPORTANT

[1] [2] [3] [4] [5]	THE WORK IS STIMULATING TO ME.
[1] [2] [3] [4] [5]	THE JOB CAN LEAD TO BETTER JOBS.
[1] [2] [3] [4] [5]	THE WAGES PAID ARE GOOD.
[1] [2] [3] [4] [5]	THE WORK BRINGS WITH IT A LOT OF PRESTIGE.
[1] [2] [3] [4] [5]	THE JOB FITS INTO MY PLAN OF LIFE.
[1] [2] [3] [4] [5]	IT'S AN OPPORTUNITY TO USE MY TRAINING AND BACKGROUND.
[1] [2] [3] [4] [5]	I CAN BE SURE OF A JOB EVEN IN HARD TIMES.
[1] [2] [3] [4] [5]	I CAN HELP OTHER PEOPLE THROUGH THE JOB.
[1] [2] [3] [4] [5]	I LIKE MY CO-WORKERS ON THE JOB.
[1] [2] [3] [4] [5]	I HAVE FREEDOM AND INDEPENDENCE ON THE JOB.

15. —IF YOU ARE CURRENTLY GOING TO SCHOOL, COMPLETE ONLY PART B AND DISREGARD PARTS C&D.
—IF YOU ARE CURRENTLY EMPLOYED, COMPLETE PART C AND DISREGARD PARTS B & D.
—IF YOU ARE CURRENTLY UNEMPLOYED, COMPLETE PART D AND DISREGARD PARTS B & C.
(IN THE CASE THAT YOU MAY BELONG TO MORE THAN ONE CATEGORY, DECIDE WHICH IS MOST CHARACTERISTIC AND FILL OUT ONLY THAT PART OF THE QUESTIONNAIRE. IF YOU ARE IN THE MILITARY ANSWER EITHER PART B OR C, WHICHEVER YOU FEEL APPLIES.)

DC 30-603

PART B—PLEASE USE NO. 2 PENCIL

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DEPARTMENT OF VOCATIONAL EDUCATION
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DO NOT WRITE IN THIS SPACE.

[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

1. NAME OF SCHOOL ____________

ADDRESS OF SCHOOL ____________

MAJOR COURSE OF STUDY ____________

2. WHAT TIME OF YEAR DID YOU BEGIN YOUR POST HIGH SCHOOL EDUCATION?

- ▭ SUMMER
- ▭ FALL
- ▭ WINTER
- ▭ SPRING

3. DO YOU ATTEND SCHOOL IN PENNSYLVANIA?

- ▭ YES
- ▭ NO

4. ASIDE FROM YOURSELF, WHO INFLUENCED AND ASSISTED YOU MOST IN CHOOSING YOUR PRESENT EDUCATIONAL PROGRAM?

- ▭ PARENTS
- ▭ FRIEND OR OTHER RELATIVE
- ▭ GUIDANCE COUNSELOR
- ▭ OTHER SCHOOL PERSONNEL
- ▭ SOMEONE OTHER THAN ABOVE

5. TYPE OF SCHOOL YOU ATTEND:

- ▭ UNIVERSITY (4 YEARS)
- ▭ STATE COLLEGE
- ▭ LIBERAL ARTS COLLEGE
- ▭ TWO YEAR COLLEGE–TRANSFER
- ▭ TWO YEAR COLLEGE–NON-DEGREE
- ▭ BUSINESS SCHOOL OR COLLEGE
- ▭ TRADE SCHOOL
- ▭ HOSPITAL SCHOOL OF NURSING
- ▭ OTHER, SPECIFY ____________

6. DISTANCE IN MILES BETWEEN YOUR HOMETOWN HIGH SCHOOL AND THE SCHOOL YOU ATTEND:

[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

7. PLEASE CHECK THE TYPES OF FINANCIAL ASSISTANCE YOU ARE RECEIVING:

- ▭ PHEAA (STATE) SCHOLARSHIP
- ▭ PHEAA (STATE) LOAN
- ▭ OTHER SCHOLARSHIP
- ▭ OTHER LOAN
- ▭ PART-TIME JOB
- ▭ ASSISTANCE FROM PARENTS
- ▭ NONE
- ▭ OTHER ____________

8. HOW DO YOU VIEW THE PROBABILITY THAT YOU WILL SUCCESSFULLY COMPLETE YOUR CURRENT EDUCATIONAL PROGRAM?

- ▭ 5 EXCELLENT
- ▭ 4 GOOD
- ▭ 3 FAIR
- ▭ 2 POOR
- ▭ 1 I HAVE ALREADY WITHDRAWN

9. WHAT IS YOUR CURRENT GPA USING THE 4 POINT SYSTEM?
(4=A, 3=B, 2=C, 1=D, 0=F)
(e.g. 2.00)
→

[0]	[0]	[0]
[1]	[1]	[1]
[2]	[2]	[2]
[3]	[3]	[3]
[4]	[4]	[4]
[5]	[5]	[5]
[6]	[6]	[6]
[7]	[7]	[7]
[8]	[8]	[8]
[9]	[9]	[9]

OC 30-804

10. RATE THE VALUE OF EACH OF THE FOLLOWING HIGH SCHOOL SUBJECTS IN TERMS OF YOUR PRESENT EDUCATIONAL PROGRAM. IF YOU DID NOT TAKE A SUBJECT MARK "0".

	DID NOT TAKE	NO VALUE	LITTLE VALUE	NEUTRAL	VALUABLE	VERY VALUABLE
ENGLISH	[0]	[1]	[2]	[3]	[4]	[5]
MATHEMATICS	[0]	[1]	[2]	[3]	[4]	[5]
SCIENCE	[0]	[1]	[2]	[3]	[4]	[5]
SOCIAL SCIENCE	[0]	[1]	[2]	[3]	[4]	[5]
HISTORY	[0]	[1]	[2]	[3]	[4]	[5]
COMMERCIAL OR BUSINESS COURSES	[0]	[1]	[2]	[3]	[4]	[5]
VOCATIONAL COURSES (SPECIFY) ____________	[0]	[1]	[2]	[3]	[4]	[5]
HOME ECONOMICS	[0]	[1]	[2]	[3]	[4]	[5]
INDUSTRIAL ARTS	[0]	[1]	[2]	[3]	[4]	[5]
OTHER (SPECIFY) ____________	[0]	[1]	[2]	[3]	[4]	[5]

11. THE FOLLOWING QUESTIONS SHOULD BE ANSWERED IN THIS MANNER:

1=HIGHLY UNSATISFACTORY
2=MODERATELY UNSATISFACTORY
3=NEUTRAL
4=MODERATELY SATISFACTORY
5=HIGHLY SATISFACTORY

HOW SATISFIED ARE YOU WITH THE FOLLOWING:

YOUR TOTAL HIGH SCHOOL EDUCATION?	[1]	[2]	[3]	[4]	[5]
THE PREPARATION YOUR HIGH SCHOOL EXPERIENCE HAS PROVIDED FOR YOUR POST-SECONDARY EDUCATION?	[1]	[2]	[3]	[4]	[5]
YOUR CHOICE OF POST HIGH SCHOOL INSTITUTIONS?	[1]	[2]	[3]	[4]	[5]
YOUR CHOICE OF EDUCATIONAL PROGRAM?	[1]	[2]	[3]	[4]	[5]
THE LEVEL OF SUCCESS YOU HAVE EXPERIENCED THUS FAR IN YOUR EDUCATIONAL PROGRAM?	[1]	[2]	[3]	[4]	[5]
THE OVERALL QUALITY OF THE PROGRAM IN WHICH YOU ARE ENROLLED?	[1]	[2]	[3]	[4]	[5]
THE SERVICES YOUR HIGH SCHOOL GUIDANCE COUNSELOR PROVIDED IN HELPING YOU SELECT GAIN ADMITTANCE TO A SCHOOL OR COLLEGE?	[1]	[2]	[3]	[4]	[5]

1\.

WHAT IS YOUR PRESENT JOB TITLE?

NAME OF EMPLOYER:

STREET CITY STATE ZIP
ADDRESS OF EMPLOYER:

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2. HOW MANY JOBS HAVE YOU HAD SINCE HIGH SCHOOL?

- ☐ ONE
- ☐ TWO
- ☐ THREE
- ☐ MORE THAN 3

3. DO YOU WORK IN PENNSYLVANIA?

- ☐ YES
- ☐ NO

4. ASIDE FROM YOURSELF, WHO ASSISTED YOU MOST IN SECURING YOUR PRESENT JOB?

- ☐ PARENTS
- ☐ FRIEND OR OTHER RELATIVE
- ☐ STATE EMPLOYMENT OFFICE PERSONNEL
- ☐ GUIDANCE COUNSELOR
- ☐ VOCATIONAL SCHOOL PERSONNEL
- ☐ SOMEONE OTHER THAN ABOVE

5. LENGTH OF TIME IN WEEKS BETWEEN HIGH SCHOOL GRADUATION AND YOUR FIRST JOB:

[0]	[0]
[1]	[1]
[2]	[2]
[3]	[3]
[4]	[4]
[5]	[5]
[6]	[6]
[7]	[7]
[8]	[8]
[9]	[9]

6. NUMBER OF WEEKS YOU WORKED AT FIRST JOB:

[0]	[0]
[1]	[1]
[2]	[2]
[3]	[3]
[4]	[4]
[5]	[5]
[6]	[6]
[7]	[7]
[8]	[8]
[9]	[9]

7. WHAT WAS YOUR APPROXIMATE BEGINNING WEEKLY SALARY FOR FIRST JOB? (Before taxes and other deductions)

$		
[0]	[0]	[0]
[1]	[1]	[1]
[2]	[2]	[2]
[3]	[3]	[3]
[4]	[4]	[4]
[5]	[5]	[5]
[6]	[6]	[6]
[7]	[7]	[7]
[8]	[8]	[8]
[9]	[9]	[9]

8. DISTANCE IN MILES BETWEEN YOUR HOMETOWN HIGH SCHOOL AND PRESENT JOB?

[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

9. WHAT APPROXIMATELY IS YOUR PRESENT WEEKLY SALARY? (Before taxes and other deductions)

$		
[0]	[0]	[0]
[1]	[1]	[1]
[2]	[2]	[2]
[3]	[3]	[3]
[4]	[4]	[4]
[5]	[5]	[5]
[6]	[6]	[6]
[7]	[7]	[7]
[8]	[8]	[8]
[9]	[9]	[9]

DO NOT WRITE IN THIS SPACE.

[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]

CONTINUE
PART C
ON OTHER
SIDE

10\.

[redacted]OTA SATISFACTION QUESTIONNAIRE

The purpose of this questionnaire is to give you a chance to tell *how you feel about your present job*, what things you are *satisfied* with and what things you are *not satisfied* with.

On this sheet you will find statements about your *present* job.

- Read each statement carefully.
- Decide *how satisfied you feel* about the aspect of your job described by the statement.

Keeping the statement in mind:

- If you feel that your job gives you *more* than you expected, check the box under "VS" (Very Satisfied);
- If you feel that your job gives you *what* you expected, check the box under "S" (Satisfied);
- If you *cannot make up your mind* whether or not the job gives you what you expected, check the box under "N" (Neither Satisfied nor Dissatisfied);
- If you feel that your job gives you *less* than you expected, check the box under "DS" (Dissatisfied);
- If you feel that your job gives you *much less* than you expected, check the box under "VDS" (Very Dissatisfied)

Remember: Keep the statement in mind when deciding *how satisfied you feel* about that aspect of your job.

Do this for *all* statements. Please answer every item.

Be frank and honest. Give a true picture of your feelings about your *present job.*

Ask yourself: How satisfied am I with this aspect of my job?

VS means I am very satisfied with this aspect of my job.

S means I am satisfied with this aspect of my job.

N means I can't decide whether I am satisfied or not with this aspect of my job.

DS means I am dissatisfied with this aspect of my job.

VDS means I am very dissatisfied with this aspect of my job.

ON MY PRESENT JOB, THIS IS HOW I FEEL ABOUT:	VS	S	N	DS	VDS
1. BEING ABLE TO KEEP BUSY ALL THE TIME	☐	☐	☐	☐	☐
2. THE CHANCE TO WORK ALONE ON THE JOB	☐	☐	☐	☐	☐
3. THE CHANCE TO DO DIFFERENT THINGS FROM TIME TO TIME	☐	☐	☐	☐	☐
4. THE CHANCE TO BE "SOMEBODY" IN THE COMMUNITY	☐	☐	☐	☐	☐
5. THE WAY MY BOSS HANDLES HIS MEN	☐	☐	☐	☐	☐
6. THE COMPETENCE OF MY SUPERVISOR IN MAKING DECISIONS	☐	☐	☐	☐	☐
7. BEING ABLE TO DO THINGS THAT DON'T GO AGAINST MY CONSCIENCE	☐	☐	☐	☐	☐
8. THE WAY MY JOB PROVIDES FOR STEADY EMPLOYMENT	☐	☐	☐	☐	☐
9. THE CHANCE TO DO THINGS FOR OTHER PEOPLE	☐	☐	☐	☐	☐
10. THE CHANCE TO TELL PEOPLE WHAT TO DO	☐	☐	☐	☐	☐
11. THE CHANCE TO DO SOMETHING THAT MAKES USE OF MY ABILITIES	☐	☐	☐	☐	☐
12. THE WAY COMPANY POLICIES ARE PUT INTO PRACTICE	☐	☐	☐	☐	☐
13. MY PAY AND THE AMOUNT OF WORK I DO	☐	☐	☐	☐	☐
14. THE CHANCES FOR ADVANCEMENT ON THIS JOB	☐	☐	☐	☐	☐
15. THE FREEDOM TO USE MY OWN JUDGEMENT	☐	☐	☐	☐	☐
16. THE CHANCE TO TRY MY OWN METHODS OF DOING THE JOB	☐	☐	☐	☐	☐
17. THE WORKING CONDITIONS	☐	☐	☐	☐	☐
18. THE WAY MY CO-WORKERS GET ALONG WITH EACH OTHER	☐	☐	☐	☐	☐
19. THE PRAISE I GET FOR DOING A GOOD JOB	☐	☐	☐	☐	☐
20. THE FEELING OF ACCOMPLISHMENT I GET FROM THE JOB	☐	☐	☐	☐	☐

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DC 30-865 [illegible]

PART C CONTINUED

11. RATE THE VALUE OF EACH OF THE FOLLOWING HIGH SCHOOL SUBJECTS IN TERMS OF YOUR PRESENT JOB. IF YOU DID NOT TAKE A SUBJECT MARK "0".

	ENGLISH	MATHEMATICS	SCIENCE	SOCIAL SCIENCE	HISTORY	COMMERCIAL OR BUSINESS COURSES	VOCATIONAL COURSES (SPECIFY)	HOME ECONOMICS	INDUSTRIAL ARTS	OTHER (SPECIFY)
DID NOT TAKE	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
NO VALUE	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
LITTLE VALUE	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]
NEUTRAL	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]
VALUABLE	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]
VERY VALUABLE	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]

12. HOW SATISFIED ARE YOU WITH YOUR TOTAL HIGH SCHOOL EDUCATION?

- ☐ 1 VERY DISSATISFIED
- ☐ 2 DISSATISFIED
- ☐ 3 NEUTRAL
- ☐ 4 SATISFIED
- ☐ 5 VERY SATISFIED

13. IN YOUR OPINION, HOW RELATED WAS YOUR TOTAL HIGH SCHOOL PROGRAM TO YOUR PRESENT JOB?

- ☐ 1 VERY UNRELATED
- ☐ 2 UNRELATED
- ☐ 3 NEUTRAL
- ☐ 4 RELATED
- ☐ 5 VERY RELATED

PART D—PLEASE USE NO. 2 PENCIL

DC 30-608

[illegible]

1. RATE THE VALUE OF EACH OF THE FOLLOWING HIGH SCHOOL SUBJECTS IN TERMS OF [illegible] EMPLOYMENT. IF YOU DID NOT TAKE A SUBJECT MARK "0".

	ENGLISH	MATHEMATICS	SCIENCE	SOCIAL SCIENCE	HISTORY	COMMERCIAL OR BUSINESS COURSES	VOCATIONAL COURSES (SPECIFY)	HOME ECONOMICS	INDUSTRIAL ARTS	OTHER (SPECIFY)
DID NOT TAKE	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]	[0]
NO VALUE	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
LITTLE VALUE	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]
NEUTRAL	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]
VALUABLE	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]	[4]
VERY VALUABLE	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]

2. HOW SATISFIED ARE YOU WITH YOUR TOTAL HIGH SCHOOL EDUCATION?

- ☐ 1 VERY DISSATISFIED
- ☐ 2 DISSATISFIED
- ☐ 3 NEUTRAL
- ☐ 4 SATISFIED
- ☐ 5 VERY SATISFIED

3. IN YOUR OPINION, HOW RELATED WAS YOUR TOTAL HIGH SCHOOL EDUCATION TO THE REAL WORLD?

- ☐ 1 VERY UNRELATED
- ☐ 2 UNRELATED
- ☐ 3 NEUTRAL
- ☐ 4 RELATED
- ☐ 5 VERY RELATED

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DEPARTMENT OF VOCATIONAL EDUCATION
UNIVERSITY PARK, PA.
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DO NOT WRITE IN THIS SPACE.

4. HOW LONG HAVE YOU BEEN UNEMPLOYED SINCE HIGH SCHOOL? (In weeks) →

[0]	[0]	[0]	[0]	[0]	[0]
[1]	[1]	[1]	[1]	[1]	[1]
[2]	[2]	[2]	[2]	[2]	[2]
[3]	[3]	[3]	[3]	[3]	[3]
[4]	[4]	[4]	[4]	[4]	[4]
[5]	[5]	[5]	[5]	[5]	[5]
[6]	[6]	[6]	[6]	[6]	[6]
[7]	[7]	[7]	[7]	[7]	[7]
[8]	[8]	[8]	[8]	[8]	[8]
[9]	[9]	[9]	[9]	[9]	[9]

5. IF YOU HAVE BEEN EMPLOYED SINCE HIGH SCHOOL, WHAT WAS YOUR JOB TITLE?

6. IF YOU HAVE BEEN EMPLOYED SINCE HIGH SCHOOL, WHY DID YOU TERMINATE YOUR EMPLOYMENT?

7. IN YOUR OWN OPINION, WHAT IS MAKING IT HARD FOR YOU TO FIND A JOB?

8. IS THERE ANY HIGH SCHOOL SUBJECT YOU DID NOT TAKE BUT FEEL WOULD HAVE HELPED YOU OBTAIN EMPLOYMENT?

9.

☐ YES ☐ NO	HAVE YOU HAD A FULL-TIME JOB SINCE HIGH SCHOOL?
☐ YES ☐ NO	HAVE YOU HAD A PART-TIME JOB SINCE HIGH SCHOOL?
☐ YES ☐ NO	WOULD YOU MOVE TO ANOTHER AREA OR CITY IF A JOB WAS AVAILABLE?
☐ YES ☐ NO	HAVE YOU ATTEMPTED TO FIND A JOB THROUGH THE CLASSIFIED ADS IN NEWSPAPERS?
☐ YES ☐ NO	HAVE YOU REGISTERED WITH THE PENNSYLVANIA EMPLOYMENT SERVICE?
☐ YES ☐ NO	HAVE YOU RECEIVED ANY JOB LEADS FROM THE PENNSYLVANIA EMPLOYMENT SERVICE?
☐ YES ☐ NO	HAS A TEACHER, GUIDANCE COUNSELOR OR ANY SCHOOL OFFICIAL HELPED YOU TRY TO FIND A JOB?
☐ YES ☐ NO	WOULD YOU CONSIDER THE MILITARY SERVICE AS A FORM OF EMPLOYMENT?

California Community College Statewide Longitudinal Study

Post-Test Questions

The questions (SAM Manual, p. 36–38) are broken down into "Essential Questions," "Highly Desirable Questions," and "Desirable Questions." The following questions, identified under these headings, would appear to be appropriate for ultimate use in the Statewide Study since they appear to address on a *post* basis some of the data elements selected for initial study.

Essential Questions

1. What is your present employment status?

   Working full-time
   Working part-time
   Not working, looking for a job
   Not working, not looking for a job
   Military service

2. Which single statement best describes your present job?

   In an occupation for which I prepared while in college
   In an occupation related to my college training
   In a field *not* related to my college training
   Apprenticeship program (specify: ________________________________)
   Not employed

3. Are you attending college?

   Yes
   No
   If yes: College ________________________________
   Major ________________________________
   Units Carried ________________________________

Highly Desirable Questions

4. How well did your college occupational training prepare you for the skills you need on your present job?

   Poorly
   Fairly well
   Well

5. Do you feel that your college occupational training was important to you in getting your present job?

   Not at all
   Some
   A great deal

SOURCE: M. Stephen Sheldon et al., *Fall Term Manual: Statewide Student Study to Supplement SAM.* Los Angeles, California: Los Angeles Pierce College, 1976.

8. What is your present rate of pay?

- $1.99 or less per hour
- $2–$2.99 per hour
- $3–$3.99 per hour
- $4–$4.99 per hour
- $5 or more per hour

Desirable Questions

10. Were you employed prior to taking your work at college?

- Yes
- No

If yes: At a lower level?

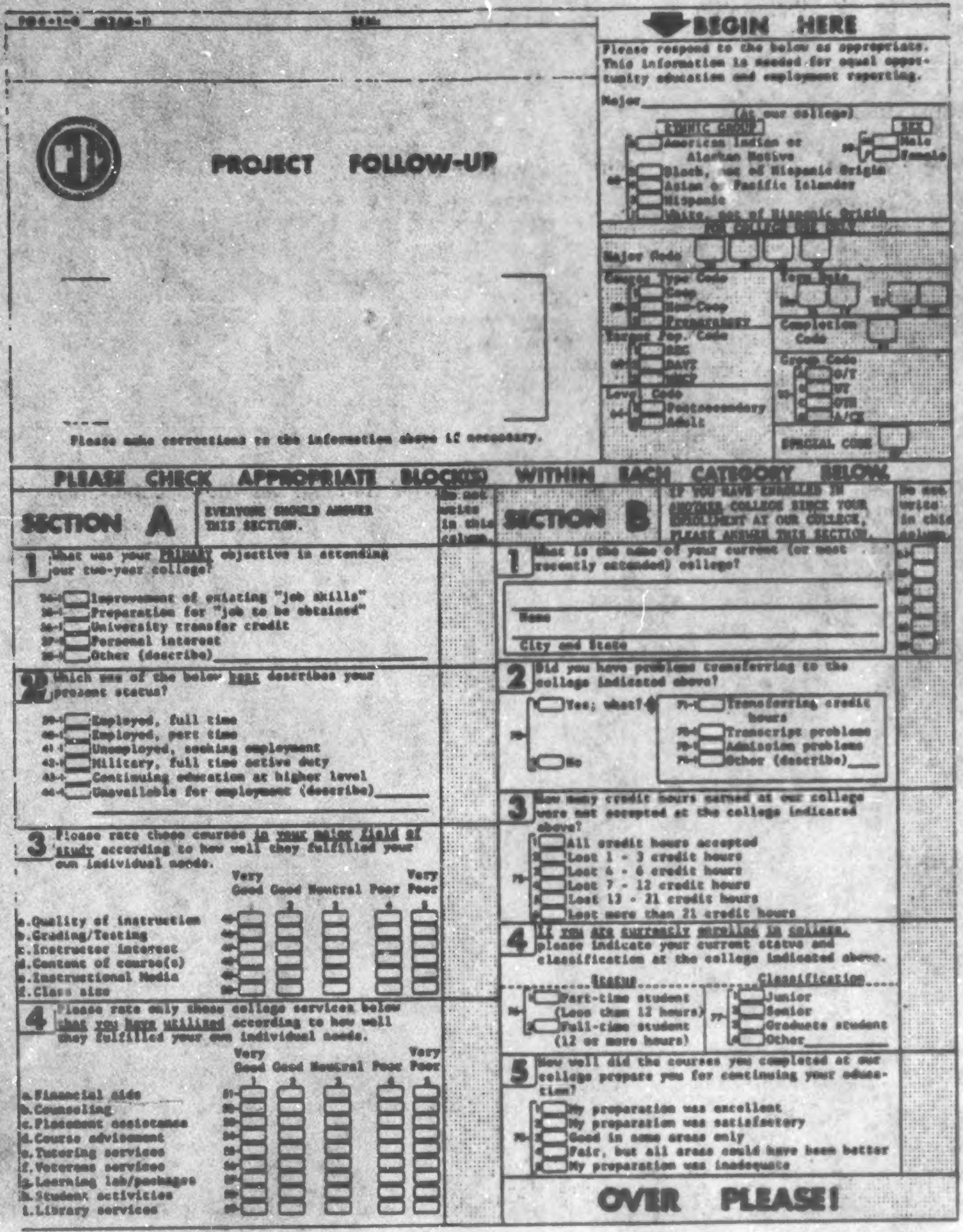
- Yes
- No

At the same level?

- Yes
- No

14. If not employed in a field related to your occupational training, was your occupational training of value to you?

- Yes
- No



PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

BEGIN HERE

Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major ________________
(At our college)

ETHNIC GROUP
- ☐ American Indian or Alaskan Native
- ☐ Black, not of Hispanic Origin
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ White, not of Hispanic Origin

SEX
- ☐ Male
- ☐ Female

FOR COLLEGE USE ONLY

Major Code ☐ ☐ ☐ ☐

Course Type Code
- ☐ Coop
- ☐ Non-Coop
- ☐ Preparatory

Term Date ☐ ☐ ☐ ☐

Completion Code ☐

Target Pop. Code
- ☐ REG
- ☐ DAVT
- ☐ [illegible]

Group Code
- ☐ G/T
- ☐ VT
- ☐ OTH
- ☐ A/CE

Level Code
- ☐ Postsecondary
- ☐ Adult

SPECIAL CODE ☐

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A EVERYONE SHOULD ANSWER THIS SECTION. Do not write in this column.

1 What was your PRIMARY objective in attending our two-year college?
- ☐ Improvement of existing "job skills"
- ☐ Preparation for "job to be obtained"
- ☐ University transfer credit
- ☐ Personal interest
- ☐ Other (describe)________________

2 Which one of the below best describes your present status?
- ☐ Employed, full time
- ☐ Employed, part time
- ☐ Unemployed, seeking employment
- ☐ Military, full time active duty
- ☐ Continuing education at higher level
- ☐ Unavailable for employment (describe)________________

3 Please rate those courses in your major field of study according to how well they fulfilled your own individual needs.

	Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a. Quality of instruction	☐	☐	☐	☐	☐
b. Grading/Testing	☐	☐	☐	☐	☐
c. Instructor interest	☐	☐	☐	☐	☐
d. Content of course(s)	☐	☐	☐	☐	☐
e. Instructional Media	☐	☐	☐	☐	☐
f. Class size	☐	☐	☐	☐	☐

4 Please rate only those college services below that you have utilized according to how well they fulfilled your own individual needs.

	Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a. Financial aids	☐	☐	☐	☐	☐
b. Counseling	☐	☐	☐	☐	☐
c. Placement assistance	☐	☐	☐	☐	☐
d. Course advisement	☐	☐	☐	☐	☐
e. Tutoring services	☐	☐	☐	☐	☐
f. Veterans services	☐	☐	☐	☐	☐
g. Learning lab/packages	☐	☐	☐	☐	☐
h. Student activities	☐	☐	☐	☐	☐
i. Library services	☐	☐	☐	☐	☐

SECTION B IF YOU HAVE ENROLLED IN ANOTHER COLLEGE SINCE YOUR ENROLLMENT AT OUR COLLEGE, PLEASE ANSWER THIS SECTION. Do not write in this column.

1 What is the name of your current (or most recently attended) college?

____
Name
____
City and State

2 Did you have problems transferring to the college indicated above?
- ☐ Yes; what?
  - ☐ Transferring credit hours
  - ☐ Transcript problems
  - ☐ Admission problems
  - ☐ Other (describe)____
- ☐ No

3 How many credit hours earned at our college were not accepted at the college indicated above?
- ☐ All credit hours accepted
- ☐ Lost 1 - 3 credit hours
- ☐ Lost 4 - 6 credit hours
- ☐ Lost 7 - 12 credit hours
- ☐ Lost 13 - 21 credit hours
- ☐ Lost more than 21 credit hours

4 If you are currently enrolled in college, please indicate your current status and classification at the college indicated above.

Status
- ☐ Part-time student (Less than 12 hours)
- ☐ Full-time student (12 or more hours)

Classification
- ☐ Junior
- ☐ Senior
- ☐ Graduate student
- ☐ Other________________

5 How well did the courses you completed at our college prepare you for continuing your education?
- ☐ My preparation was excellent
- ☐ My preparation was satisfactory
- ☐ Good in some areas only
- ☐ Fair, but all areas could have been better
- ☐ My preparation was inadequate

OVER PLEASE!

Source: Texas Student Information System (Tex-SIS), Tex-SIS Support Services, Navarro College, Corsicana, Texas.

SECTION C

IF YOU HAVE BEEN EMPLOYED SINCE YOU LEFT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

☐ Yes, directly related
☐ Yes, closely related
☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college since you left our college?

☐ Yes, directly related
☐ Yes, closely related
☐ No (IF NO, Go to Section D)

2 Please complete the information below regarding the occupation related to the courses completed at our college.

Job title ______________________

Name of Employer ______________________

Street address of Employer ______________________

City of Employment ______________________

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

☐ Very good
☐ Good
☐ Neutral
☐ Poor
☐ Very poor

4 Please check below if the course(s) you took at our college helped you in your occupational area in any of the following ways.

☐ Helped to obtain job
☐ Helped performance on present job
☐ Helped advance on present job
☐ None of the above
☐ Other (describe) ______________________

5 If you are employed full-time, please indicate your approximate average monthly salary range (gross) below. This information, when combined with other members of your graduating class, will provide valuable information to other individuals in career planning.

☐ Up to $300
☐ $330 - $399
☐ $400 - $499
☐ $500 - $599
☐ $600 - $699
☐ $700 - $799
☐ $800 - $899
☐ $900 - $999
☐ $1,000 - $1,099
☐ $1,100 - $1,199
☐ $1,200 - Up

6 Were you employed in your occupational area PRIOR to enrolling in the courses completed at our college?

☐ No
☐ Yes

7 How would you rate the availability of jobs in your occupational area?

☐ Very good
☐ Good
☐ Neutral
☐ Poor
☐ Very poor

SECTION D

EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 If your occupational area is not related to the courses you have completed at our college (as indicated in Section C) please check each reason which applies. If occupational area is related to courses completed, go to Question 2.

☐ Transferred to a four-year college
☐ Not sufficiently qualified for a job in my field of college preparation
☐ Preferred to work in another field
☐ Found better paying job in another field
☐ Could not find a job in field of preparation
☐ Worked previously in field of preparation, but changed
☐ Other (describe) ______________________

2 How do you see the courses completed at our college in terms of your career plans:

☐ of immediate, direct benefit
☐ of long term, direct benefit
☐ of indirect benefit
☐ of no benefit

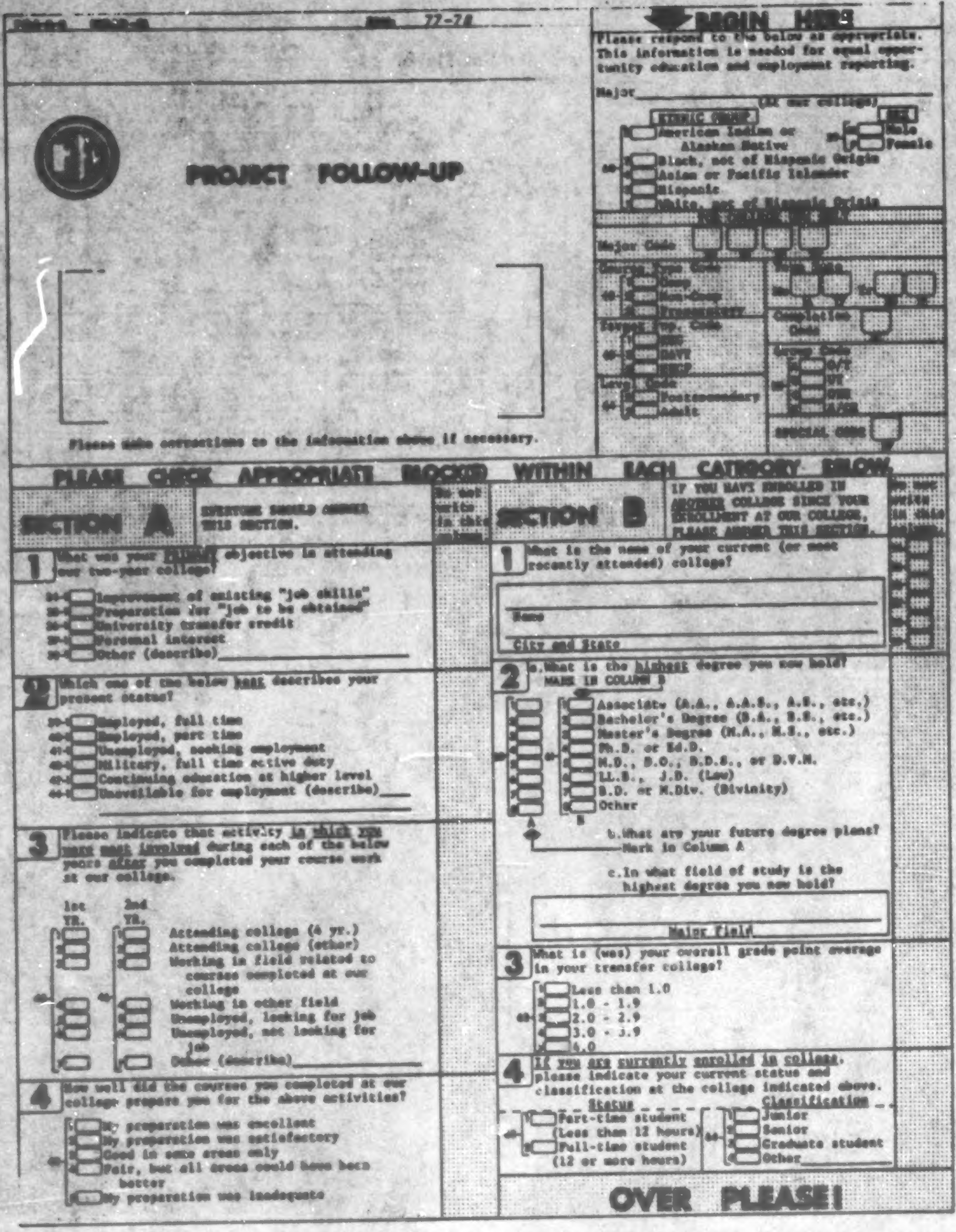
3 Are you interested in taking other courses at our college? You may include courses not presently offered by our college.

☐ No
☐ Yes; what course(s) ______________________

4 We would appreciate any comments regarding how we could improve the courses you have completed and/or services we have provided. Use back of college letter for additional space.

GRAD-1

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!



[illegible] [illegible] 77-78

PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

BEGIN HERE

Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major ______________________ (At our college)

ETHNIC GROUP
- ☐ American Indian or Alaskan Native
- ☐ Black, not of Hispanic Origin
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ White, not of Hispanic Origin

SEX
- ☐ Male
- ☐ Female

Major Code ☐☐☐☐

Comp, Non-Comp

Completion Code ☐

Postsecondary, Adult

SPECIAL CODE ☐

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column

1 What was your PRIMARY objective in attending our two-year college?
- ☐ Improvement of existing "job skills"
- ☐ Preparation for "job to be obtained"
- ☐ University transfer credit
- ☐ Personal interest
- ☐ Other (describe)______________

2 Which one of the below best describes your present status?
- ☐ Employed, full time
- ☐ Employed, part time
- ☐ Unemployed, seeking employment
- ☐ Military, full time active duty
- ☐ Continuing education at higher level
- ☐ Unavailable for employment (describe)______________

3 Please indicate that activity in which you were most involved during each of the below years after you completed your course work at our college.

1st YR.	2nd YR.	
☐	☐	Attending college (4 yr.)
☐	☐	Attending college (other)
☐	☐	Working in field related to courses completed at our college
☐	☐	Working in other field
☐	☐	Unemployed, looking for job
☐	☐	Unemployed, not looking for job
☐	☐	Other (describe)______________

4 How well did the courses you completed at our college prepare you for the above activities?
- ☐ My preparation was excellent
- ☐ My preparation was satisfactory
- ☐ Good in some areas only
- ☐ Fair, but all areas could have been better
- ☐ My preparation was inadequate

SECTION B IF YOU HAVE ENROLLED IN ANOTHER COLLEGE SINCE YOUR ENROLLMENT AT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column

1 What is the name of your current (or most recently attended) college?

Name ______________________

City and State ______________________

2 a. What is the highest degree you now hold? MARK IN COLUMN B

A	B	
☐	☐	Associate (A.A., A.A.S., A.S., etc.)
☐	☐	Bachelor's Degree (B.A., B.S., etc.)
☐	☐	Master's Degree (M.A., M.S., etc.)
☐	☐	Ph.D. or Ed.D.
☐	☐	M.D., D.O., D.D.S., or D.V.M.
☐	☐	LL.B., J.D. (Law)
☐	☐	B.D. or M.Div. (Divinity)
☐	☐	Other

b. What are your future degree plans? Mark in Column A

c. In what field of study is the highest degree you now hold?

____
Major Field

3 What is (was) your overall grade point average in your transfer college?
- ☐ Less than 1.0
- ☐ 1.0 - 1.9
- ☐ 2.0 - 2.9
- ☐ 3.0 - 3.9
- ☐ 4.0

4 If you are currently enrolled in college, please indicate your current status and classification at the college indicated above.

Status
- ☐ Part-time student (Less than 12 hours)
- ☐ Full-time student (12 or more hours)

Classification
- ☐ Junior
- ☐ Senior
- ☐ Graduate student
- ☐ Other______________

OVER PLEASE!

SECTION C

IF YOU HAVE BEEN EMPLOYED SINCE YOU LEFT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college since you left our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No (IF NO, Go to Section D)

2 Please complete the information below regarding the occupation related to the courses completed at our college.

Job title

Name of Employer

Street address of Employer

City of Employment

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

- ☐ Very good
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Very poor

4 If you are employed full-time, please indicate your approximate average monthly salary range (gross) below. This information, when combined with other members of your graduating class, will provide valuable information to other individuals in career planning.

- ☐ Up to $300
- ☐ $300 - $399
- ☐ $400 - $499
- ☐ $500 - $599
- ☐ $600 - $699
- ☐ $700 - $799
- ☐ $800 - $899
- ☐ $900 - $999
- ☐ $1,000 - $1,099
- ☐ $1,100 - $1,199
- ☐ $1,200 - Up

5 How far from our college are you currently living?

- ☐ Up to 25 miles
- ☐ 25 - 49 miles
- ☐ 50 - 99 miles
- ☐ 100 - 199 miles
- ☐ 200 miles and over

6 How satisfied are you with your field of employment?

- ☐ Extremely satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Unsatisfied
- ☐ Extremely unsatisfied

7 How do you see the courses completed at our college in terms of your career plans:

- ☐ of immediate, direct benefit
- ☐ of long term, direct benefit
- ☐ of indirect benefit
- ☐ of no benefit

SECTION D

EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 If your occupational area is not related to the courses you have completed at our college (as indicated in Section C) please check each reason which applies. If occupational area is related to courses completed, go to Question 2.

- ☐ Transferred to a four-year college
- ☐ Not sufficiently qualified for a job in my field of college preparation
- ☐ Preferred to work in another field
- ☐ Found better paying job in another field
- ☐ Could not find a job in field of preparation
- ☐ Worked previously in field of preparation, but changed
- ☐ Other (describe)____________________

2 Would you recommend the courses you completed at our college to others?

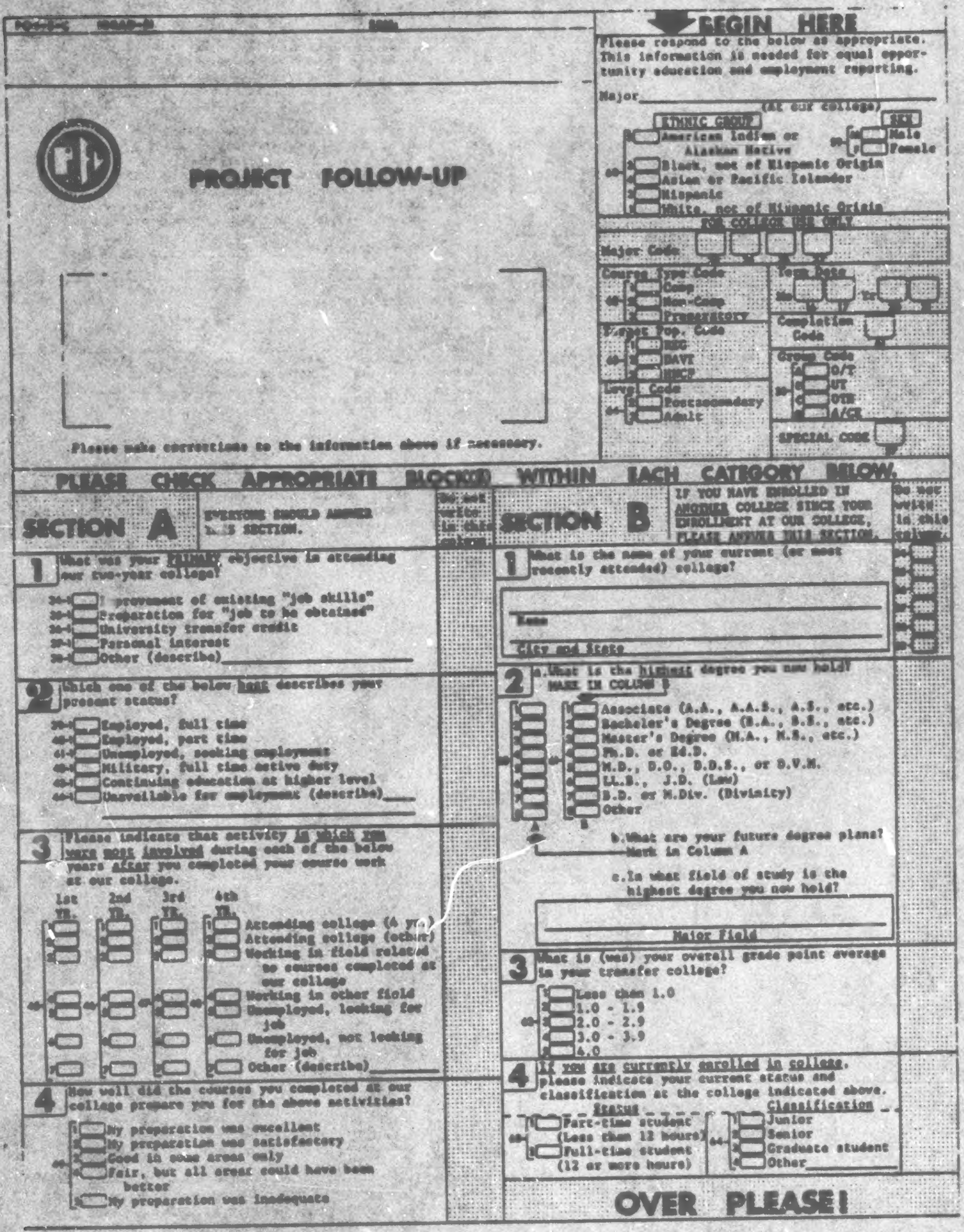
- ☐ Yes
- ☐ No

3 Have you completed credit courses at our college since your original date of completion?

- ☐ Yes; how many hours?
  - ☐ 1 - 6
  - ☐ 7 - 12
  - ☐ 13 - 15
  - ☐ 16 - 18
  - ☐ More than 18
- ☐ No

4 We would appreciate any comments regarding how we could improve the program you have completed and/or services we have provided. Use back of college letter if additional space is needed.

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!



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- ☐ Hispanic
- ☐ White, not of Hispanic Origin

SEX
- ☐ Male
- ☐ Female

FOR COLLEGE USE ONLY

Major Code ☐☐☐☐

Course Type Code
- ☐ Comp
- ☐ Non-Comp
- ☐ Preparatory

Term Date Mo ☐☐ Yr ☐☐

Completion Code ☐

Target Pop. Code
- ☐ REG
- ☐ DAVT
- ☐ HNCP

Group Code
- ☐ O/T
- ☐ UT
- ☐ OTR
- ☐ A/CE

Level Code
- ☐ Postsecondary
- ☐ Adult

SPECIAL CODE ☐

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A

EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 What was your PRIMARY objective in attending our two-year college?
- ☐ Improvement of existing "job skills"
- ☐ Preparation for "job to be obtained"
- ☐ University transfer credit
- ☐ Personal interest
- ☐ Other (describe) ______________

2 Which one of the below best describes your present status?
- ☐ Employed, full time
- ☐ Employed, part time
- ☐ Unemployed, seeking employment
- ☐ Military, full time active duty
- ☐ Continuing education at higher level
- ☐ Unavailable for employment (describe) ______________

3 Please indicate that activity in which you were most involved during each of the below years after you completed your course work at our college.

1st YR.	2nd YR.	3rd YR.	4th YR.	
☐	☐	☐	☐	Attending college (4 yr.)
☐	☐	☐	☐	Attending college (other)
☐	☐	☐	☐	Working in field related to courses completed at our college
☐	☐	☐	☐	Working in other field
☐	☐	☐	☐	Unemployed, looking for job
☐	☐	☐	☐	Unemployed, not looking for job
☐	☐	☐	☐	Other (describe) ______________

4 How well did the courses you completed at our college prepare you for the above activities?
- ☐ My preparation was excellent
- ☐ My preparation was satisfactory
- ☐ Good in some areas only
- ☐ Fair, but all areas could have been better
- ☐ My preparation was inadequate

SECTION B

IF YOU HAVE ENROLLED IN ANOTHER COLLEGE SINCE YOUR ENROLLMENT AT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 What is the name of your current (or most recently attended) college?

Name ______________

City and State ______________

2 a. What is the highest degree you now hold? MARK IN COLUMN B

A	B	
☐	☐	Associate (A.A., A.A.S., A.S., etc.)
☐	☐	Bachelor's Degree (B.A., B.S., etc.)
☐	☐	Master's Degree (M.A., M.S., etc.)
☐	☐	Ph.D. or Ed.D.
☐	☐	M.D., D.O., D.D.S., or D.V.M.
☐	☐	LL.B., J.D. (Law)
☐	☐	B.D. or M.Div. (Divinity)
☐	☐	Other

b. What are your future degree plans? Mark in Column A

c. In what field of study is the highest degree you now hold?

Major Field ______________

3 What is (was) your overall grade point average in your transfer college?
- ☐ Less than 1.0
- ☐ 1.0 - 1.9
- ☐ 2.0 - 2.9
- ☐ 3.0 - 3.9
- ☐ 4.0

4 If you are currently enrolled in college, please indicate your current status and classification at the college indicated above.

Status
- ☐ Part-time student (Less than 12 hours)
- ☐ Full-time student (12 or more hours)

Classification
- ☐ Junior
- ☐ Senior
- ☐ Graduate student
- ☐ Other ______________

OVER PLEASE!

SECTION C

IF YOU HAVE BEEN EMPLOYED SINCE YOU LEFT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

1 ☐ Yes, directly related
2 ☐ Yes, closely related
3 ☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college since you left our college?

1 ☐ Yes, directly related
2 ☐ Yes, closely related
3 ☐ No (IF NO, Go to Section D)

2 Please complete the information below regarding the occupation related to the courses completed at our college.

____
Job title
____
Name of Employer
____
Street address of Employer
____
City of Employment

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

34- 1 ☐ Very good
2 ☐ Good
3 ☐ Neutral
4 ☐ Poor
5 ☐ Very poor

4 If you are employed full-time, please indicate your approximate average monthly salary range (gross) below. This information, when combined with other members of your graduating class, will provide valuable information to other individuals in career planning.

35- A ☐ Up to $300
B ☐ $300 - $399
C ☐ $400 - $499
D ☐ $500 - $599
E ☐ $600 - $699
F ☐ $700 - $799
G ☐ $800 - $899
H ☐ $900 - $999
I ☐ $1,000 - $1,099
J ☐ $1,100 - $1,199
K ☐ $1,200 - Up

5 How far from our college are you currently living?

36- 1 ☐ Up to 25 miles
2 ☐ 25 - 49 miles
3 ☐ 50 - 99 miles
4 ☐ 100 - 199 miles
5 ☐ 200 miles and over

6 How satisfied are you with your field of employment?

37- 1 ☐ Extremely satisfied
2 ☐ Satisfied
3 ☐ Neutral
4 ☐ Unsatisfied
5 ☐ Extremely unsatisfied

7 How do you see the courses completed at our college in terms of your career plans:

38-1 ☐ of immediate, direct benefit
39-1 ☐ of long term, direct benefit
40-1 ☐ of indirect benefit
41-1 ☐ of no benefit

SECTION D

EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 If your occupational area is not related to the courses you have completed at our college (as indicated in Section C) please check each reason which applies. If occupational area is related to courses completed, go to Question 2.

42-1 ☐ Transferred to a four-year college
43-1 ☐ Not sufficiently qualified for a job in my field of college preparation
44-1 ☐ Preferred to work in another field
45-1 ☐ Found better paying job in another field
46-1 ☐ Could not find a job in field of preparation
47-1 ☐ Worked previously in field of preparation, but changed
48-1 ☐ Other (describe)______________________

2 Would you recommend the courses you completed at our college to others?

49- 1 ☐ Yes
2 ☐ No

3 Have you completed credit courses at our college since your original date of completion?

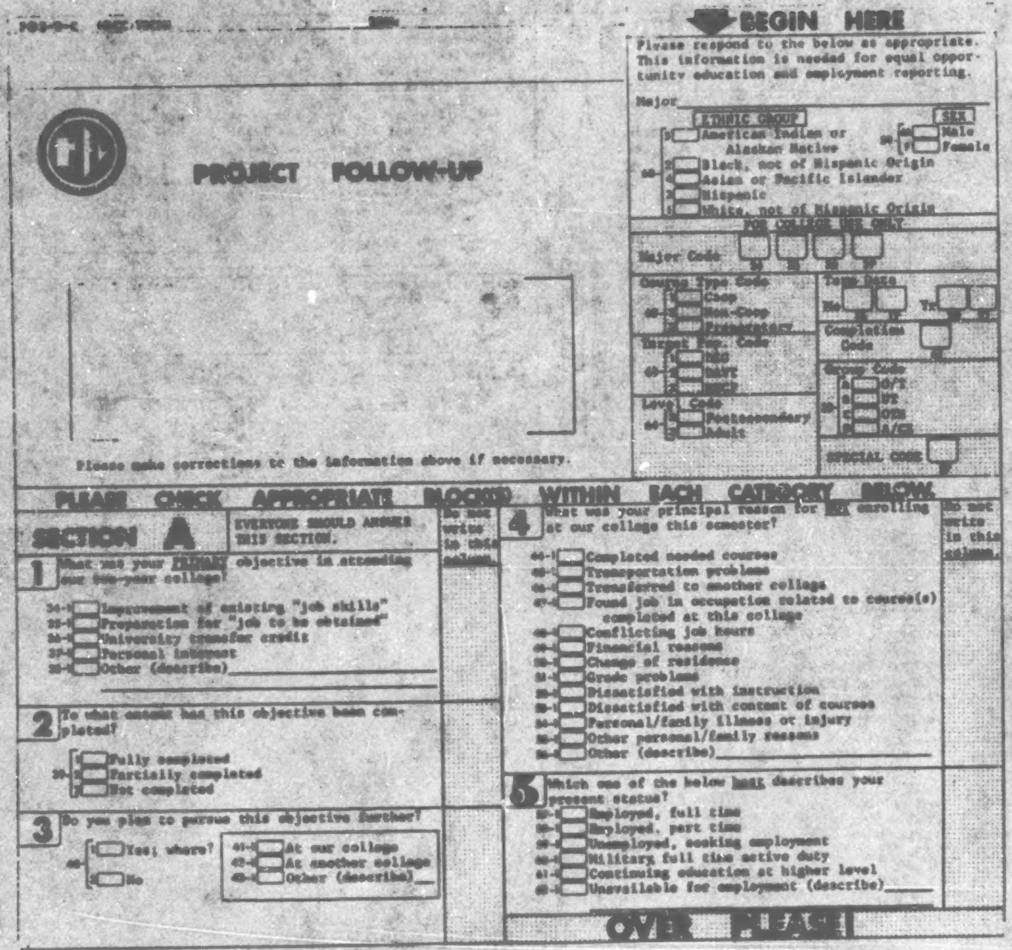
50- 1 ☐ Yes; how many hours?
2 ☐ No

51- 1 ☐ 1 - 6
2 ☐ 7 - 12
3 ☐ 13 - 15
4 ☐ 16 - 18
5 ☐ More than 18

4 We would appreciate any comments regarding how we could improve the program you have completed and/or services we have provided. Use back of college letter if additional space is needed.

GRAD-2

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!



BEGIN HERE

Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major____________________

ETHNIC GROUP

- 5 ☐ American Indian or Alaskan Native
- 2 ☐ Black, not of Hispanic Origin
- 4 ☐ Asian or Pacific Islander
- 3 ☐ Hispanic
- 1 ☐ White, not of Hispanic Origin

SEX

- M ☐ Male
- F ☐ Female

FOR COLLEGE USE ONLY

Major Code ☐ ☐ ☐ ☐

Course Type Code
- ☐ Coop
- ☐ Non-Coop
- ☐ Preparatory

Term Date
Mo ☐ ☐ Yr ☐ ☐

Completion Code ☐

Target Pop. Code
- 1 ☐ [illegible]
- 2 ☐ DAVT
- 3 ☐ [illegible]

Group Code
- A ☐ O/T
- B ☐ UT
- C ☐ OTR
- D ☐ A/CE

Level Code
- 2 ☐ Postsecondary
- 3 ☐ Adult

SPECIAL CODE ☐

PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A

EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 What was your PRIMARY objective in attending our two-year college?

- 34-1 ☐ Improvement of existing "job skills"
- 35-1 ☐ Preparation for "job to be obtained"
- 36-1 ☐ University transfer credit
- 37-1 ☐ Personal interest
- 38-1 ☐ Other (describe)____________________

2 To what extent has this objective been completed?

- 1 ☐ Fully completed
- 2 ☐ Partially completed
- 3 ☐ Not completed

3 Do you plan to pursue this objective further?

- 1 ☐ Yes; where?
  - 41-1 ☐ At our college
  - 42-1 ☐ At another college
  - 43-1 ☐ Other (describe)____
- 2 ☐ No

4 What was your principal reason for NOT enrolling at our college this semester?

- 44-1 ☐ Completed needed courses
- ☐ Transportation problems
- ☐ Transferred to another college
- ☐ Found job in occupation related to course(s) completed at this college
- ☐ Conflicting job hours
- ☐ Financial reasons
- ☐ Change of residence
- ☐ Grade problems
- ☐ Dissatisfied with instruction
- ☐ Dissatisfied with content of courses
- ☐ Personal/family illness or injury
- ☐ Other personal/family reasons
- ☐ Other (describe)____________________

Do not write in this column.

5 Which one of the below best describes your present status?

- ☐ Employed, full time
- ☐ Employed, part time
- ☐ Unemployed, seeking employment
- ☐ Military, full time active duty
- ☐ Continuing education at higher level
- ☐ Unavailable for employment (describe)______

OVER PLEASE!

SECTION B

IF YOU HAVE BEEN EMPLOYED SINCE YOU LEFT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college since you left our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No (IF NO, Go to Section C)

2 Please check below if the course(s) you took at our college helped you in your occupational area in any of the following ways.

- ☐ Helped to obtain job
- ☐ Helped performance on present job
- ☐ Helped advance on present job
- ☐ None of the above
- ☐ Other (describe)____________________

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

- ☐ Very good
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Very poor

4 Would you recommend the course(s) taken at our college to others employed in positions similar to yours?

- ☐ No
- ☐ Undecided
- ☐ Yes

5 Were you employed in your occupational area PRIOR to enrolling in the course(s) completed at our college?

- ☐ No
- ☐ Yes

Do not write in this column.

SECTION C

ALL STUDENTS SHOULD ANSWER THIS SECTION.

1 Approximately how many credit hours have you completed at our college?

- ☐ None
- ☐ 1 - 10
- ☐ 11 - 20
- ☐ 21 - 30
- ☐ 31 - 40
- ☐ 41 - 50
- ☐ 51 - 60
- ☐ More than 60

2 How do you see the course(s) completed at our college in terms of your career plans:

- ☐ of immediate, direct benefit
- ☐ of long term, direct benefit
- ☐ of indirect benefit
- ☐ of no benefit

3 Are you interested in taking other courses at our college? You may include courses not presently offered by our college.

- ☐ No
- ☐ Yes; what course(s)____________________

4 Which statement best describes your feeling about your educational experience at our college?

- ☐ Very satisfied
- ☐ Satisfied
- ☐ Neutral
- ☐ Very disappointed
- ☐ Disappointed

We would appreciate receiving any comments regarding how we could improve the course(s) you have completed and/or services we have provided. Use back of college letter for additional space.

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!

[illegible] [illegible] [illegible]:

PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

FOR COLLEGE USE ONLY

[illegible]
- ☐ American Indian or Alaskan Native
- ☐ Black, not of Hispanic Origin
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ White, not of Hispanic Origin

[illegible]
- ☐ Male
- ☐ Female

Major Code: ☐ ☐ ☐ ☐

Course Type Code
- ☐ Coop
- ☐ Non-Coop
- ☐ [illegible]

Completion Date
Mo ☐ ☐ Yr ☐ ☐

Completion Code ☐

Target Pop. Code
- ☐ [illegible]
- ☐ [illegible]
- ☐ [illegible]

Group Code
- ☐ O/T
- ☐ [illegible]
- ☐ [illegible]
- ☐ [illegible]

Level Code
- ☐ Postsecondary
- ☐ Adult

SPECIAL CODE ☐

FOR COLLEGE USE ONLY

GRADUATE'S NAME ____________________

JOB TITLE ____________________

PROGRAM MAJOR ____________________

____
EMPLOYER (COMPANY NAME - INSTITUTION - ORGANIZATION, ETC.)

1 Is the job title and status of the above graduate accurate?
- ☐ Yes
- ☐ No; IF NO, please describe change(s) below.

2 What is your relationship with the above graduate?
- ☐ Employer
- ☐ Supervisor
- ☐ Personnel staff
- ☐ Co-worker
- ☐ Other (describe) ____________________

OVER PLEASE!

3 Please rate the training received by the graduate in the following personal skill areas. Please respond only to those areas you feel are appropriate.

Do not write in this column.

	Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a.Accepting responsibility	☐	☐	☐	☐	☐
b.Punctuality	☐	☐	☐	☐	☐
c.Personal initiative	☐	☐	☐	☐	☐
d.Willingness to learn	☐	☐	☐	☐	☐
e.Co-worker cooperation	☐	☐	☐	☐	☐
f.Management cooperation	☐	☐	☐	☐	☐
g.Work attendance	☐	☐	☐	☐	☐
h.Work attitude	☐	☐	☐	☐	☐
i.Personal appearance	☐	☐	☐	☐	☐
j.Compliance with policies	☐	☐	☐	☐	☐

4 Please rate the training received by the graduate in the following technical skill areas. Please respond only to those areas you feel are applicable to the occupational area.

	Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a.Mathematical skills	☐	☐	☐	☐	☐
b.Technical knowledge	☐	☐	☐	☐	☐
c.Organizational ability	☐	☐	☐	☐	☐
d.Communication skills	☐	☐	☐	☐	☐
e.Problem solving skills	☐	☐	☐	☐	☐
f.Work quality	☐	☐	☐	☐	☐
g.Work quantity	☐	☐	☐	☐	☐
h.Manual dexterity	☐	☐	☐	☐	☐
i.Meeting the public	☐	☐	☐	☐	☐
j.Following instructions	☐	☐	☐	☐	☐
k.Operation of equipment	☐	☐	☐	☐	☐

5 What is your overall rating of the training received by the graduate as it relates to the requirements of his or her job?

1 ☐ Very good
2 ☐ Good
3 ☐ Neutral
4 ☐ Poor
5 ☐ Very poor

6 What, in your opinion, is the job outlook for program graduates of this particular occupational field?

Do not write in this column.

Present		Future
1 ☐	Very good	1 ☐
2 ☐	Good	2 ☐
62-3 ☐	Neutral	63-3 ☐
4 ☐	Poor	4 ☐
5 ☐	Very poor	5 ☐

7 As a result of the graduate's college training, how would you rate his or her preparation in relation to other employees without such college training?

64-1 ☐ No basis for opinion
65-1 ☐ Graduate is better prepared
66-1 ☐ Both are about the same
67-1 ☐ Graduate is less prepared

8 To what extent, if any, has the graduate's college training added to his or her ability for job placement and advancement?

1 ☐ Very much
2 ☐ Much
68-3 ☐ Neutral
4 ☐ Very little
5 ☐ None

9 What was the primary source(s) for the initial hiring of the graduate named?

69-1 ☐ Employment agency
70-1 ☐ College faculty member
71-1 ☐ College job placement office
72-1 ☐ Mutual acquaintance
73-1 ☐ Applicant applied on own initiative
74-1 ☐ Other (describe)____________________

____

____

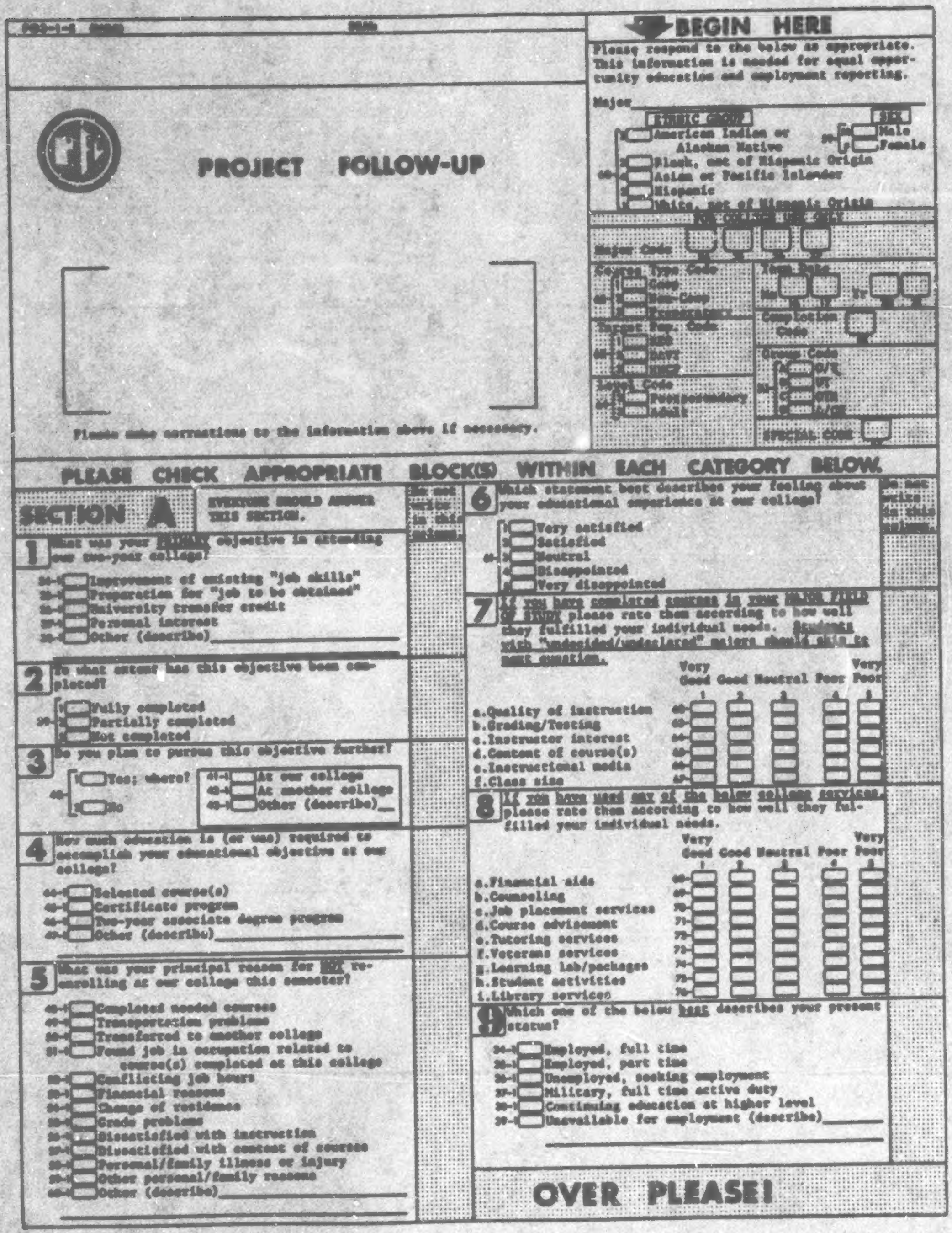
____

A What suggestions do you have for improving the technical and/or personal skills of future graduates?

B What, in your opinion, are additional areas of training (job titles, skills, etc.) in which our college should become involved?

EMP

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!



PROJECT FOLLOW-UP

Please make corrections to the information above if necessary.

BEGIN HERE

Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major____________________

ETHNIC GROUP
- ☐ American Indian or Alaskan Native
- ☐ Black, not of Hispanic Origin
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ White, not of Hispanic Origin

SEX
- ☐ Male
- ☐ Female

FOR COLLEGE USE ONLY

Major Code ☐☐☐☐

Course Type Code
- ☐ Comp
- ☐ Non-Comp
- ☐ [illegible]

Term Date Mo ☐☐ Yr ☐☐

Target Pop. Code
- ☐ [illegible]
- ☐ [illegible]
- ☐ [illegible]

Completion Code ☐

Level Code
- ☐ Postsecondary
- ☐ Adult

Group Code
- A ☐ O/T
- B ☐ UT
- C ☐ OTR
- D ☐ [illegible]

SPECIAL CODE ☐

PLEASE CHECK APPROPRIATE BLOCK(S) WITHIN EACH CATEGORY BELOW.

SECTION A EVERYONE SHOULD ANSWER THIS SECTION.

Do not write in this column.

1 What was your PRIMARY objective in attending our two-year college?
- 34-1 ☐ Improvement of existing "job skills"
- 35-1 ☐ Preparation for "job to be obtained"
- 36-1 ☐ University transfer credit
- 37-1 ☐ Personal interest
- 38-1 ☐ Other (describe)__________

2 To what extent has this objective been completed?
- 39- 1 ☐ Fully completed
- 2 ☐ Partially completed
- 3 ☐ Not completed

3 Do you plan to pursue this objective further?
- 40- 1 ☐ Yes; where?
  - 41-1 ☐ At our college
  - 42-1 ☐ At another college
  - 43-1 ☐ Other (describe)___
- 2 ☐ No

4 How much education is (or was) required to accomplish your educational objective at our college?
- 44-1 ☐ Selected course(s)
- 45-1 ☐ Certificate program
- 46-1 ☐ Two-year associate degree program
- 47-1 ☐ Other (describe)__________

5 What was your principal reason for NOT re-enrolling at our college this semester?
- 48-1 ☐ Completed needed courses
- 49-1 ☐ Transportation problems
- 50-1 ☐ Transferred to another college
- 51-1 ☐ Found job in occupation related to course(s) completed at this college
- 52-1 ☐ Conflicting job hours
- 53-1 ☐ Financial reasons
- 54-1 ☐ Change of residence
- 55-1 ☐ Grade problems
- 56-1 ☐ Dissatisfied with instruction
- 57-1 ☐ Dissatisfied with content of courses
- 58-1 ☐ Personal/family illness or injury
- 59-1 ☐ Other personal/family reasons
- 60-1 ☐ Other (describe)__________

6 Which statement best describes your feeling about your educational experience at our college?
- 61- 1 ☐ Very satisfied
- 2 ☐ Satisfied
- 3 ☐ Neutral
- 4 ☐ Disappointed
- 5 ☐ Very disappointed

7 If you have completed courses in your MAJOR FIELD OF STUDY please rate them according to how well they fulfilled your individual needs. Students with "undecided/undeclared" majors should skip to next question.

		Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a.Quality of instruction	62-	☐	☐	☐	☐	☐
b.Grading/Testing	63-	☐	☐	☐	☐	☐
c.Instructor interest	64-	☐	☐	☐	☐	☐
d.Content of course(s)	65-	☐	☐	☐	☐	☐
e.Instructional media	66-	☐	☐	☐	☐	☐
f.Class size	67-	☐	☐	☐	☐	☐

8 If you have used any of the below college services, please rate them according to how well they fulfilled your individual needs.

		Very Good 1	Good 2	Neutral 3	Poor 4	Very Poor 5
a.Financial aids	68-	☐	☐	☐	☐	☐
b.Counseling	69-	☐	☐	☐	☐	☐
c.Job placement services	70-	☐	☐	☐	☐	☐
d.Course advisement	71-	☐	☐	☐	☐	☐
e.Tutoring services	72-	☐	☐	☐	☐	☐
f.Veterans services	73-	☐	☐	☐	☐	☐
g.Learning lab/packages	74-	☐	☐	☐	☐	☐
h.Student activities	75-	☐	☐	☐	☐	☐
i.Library services	76-	☐	☐	☐	☐	☐

9 Which one of the below best describes your present status?
- 34-1 ☐ Employed, full time
- 35-1 ☐ Employed, part time
- 36-1 ☐ Unemployed, seeking employment
- 37-1 ☐ Military, full time active duty
- 38-1 ☐ Continuing education at higher level
- 39-1 ☐ Unavailable for employment (describe)__________

OVER PLEASE!

SECTION B

IF YOU HAVE BEEN EMPLOYED SINCE YOU LEFT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

Do not write in this column.

1 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college since you left our college?

- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No (IF NO, Go to Section C)

2 Please check below if the course(s) you took at our college helped you in your occupational area in any of the following ways.

- ☐ Helped to obtain job
- ☐ Helped performance on present job
- ☐ Helped advance on present job
- ☐ None of the above
- ☐ Other (describe)________________

3 How would you rate the training you received at our college in relation to its usefulness to you in performing your job?

- ☐ Very good
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Very poor

4 Would you recommend the course(s) taken at our college to others employed in positions similar to yours?

- ☐ No
- ☐ Undecided
- ☐ Yes

5 Were you employed in your occupational area PRIOR to enrolling in the course(s) completed at our college?

- ☐ No
- ☐ Yes

SECTION C

IF YOU HAVE ENROLLED IN ANOTHER COLLEGE SINCE YOUR ENROLLMENT AT OUR COLLEGE, PLEASE ANSWER THIS SECTION.

1 What is the name of your current (or most recently attended) college?

____
Name

____
City and State

2 Did you have problems transferring to the college indicated above?

- ☐ Yes; what?
  - ☐ Transferring credit hours
  - ☐ Transcript problems
  - ☐ Admission problems
  - ☐ Other (describe)___
- ☐ No

3 How many credit hours earned at our college were not accepted at the college indicated above?

- ☐ All credit hours accepted
- ☐ Lost 1 - 3 credit hours
- ☐ Lost 4 - 6 credit hours
- ☐ Lost 7 - 12 credit hours
- ☐ Lost 13 - 21 credit hours
- ☐ Lost more than 21 credit hours

Do not write in this column.

4 In your opinion, how well did our college prepare you for continuing your education?

- ☐ Very good
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Very poor

5 IF YOU ARE CURRENTLY ENROLLED IN COLLEGE, please indicate your current status and classification at the college indicated above.

Status	Classification
☐ Part-time student (Less than 12 hours)	☐ Freshman
☐ Full-time student (12 or more hours)	☐ Sophomore
	☐ Junior
	☐ Senior
	☐ Graduate student

SECTION D

ALL STUDENTS SHOULD ANSWER THIS SECTION.

1 Approximately how many credit hours have you completed at our college?

- ☐ None
- ☐ 1 - 10
- ☐ 11 - 20
- ☐ 21 - 30
- ☐ 31 - 40
- ☐ 41 - 50
- ☐ 51 - 60
- ☐ More than 60

2 How do you see the course(s) completed at our college in terms of your career plans:

- 70-1 ☐ of immediate, direct benefit
- 71-1 ☐ of long term, direct benefit
- 72-1 ☐ of indirect benefit
- 73-1 ☐ of no benefit

3 Are you interested in taking other courses at our college? You may include courses not presently offered by our college.

- ☐ No
- ☐ Yes; what course(s)____________________

____

4 We would appreciate any comments regarding how we could improve the course(s) you have completed and/or services we have provided. Use back of college letter for additional space.

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS FORM IN THE PRE-PAID ENVELOPE AS SOON AS POSSIBLE!

In our efforts to provide you with worthwhile courses and services, we periodically conduct surveys to find out if we are living up to YOUR expectations. Our records indicate that you completed courses at our college this past year. Because of this, we are requesting your response to the questions on the back of this card. It is only through YOUR response that we can live up to your expectations. Answers to individual forms are confidential and do not affect your status with this college in any way. Please call us if we can supply additional information or answer any questions about this form. Thank you.

FOR COLLEGE USE ONLY

Data provided by:

- ☐ Mail questionnaire
- ☐ Interview
- ☐ School records

Please make corrections to the information above if necessary.

FUH-1-B (A/CE-PREP) SEM:

CHECK APPROPRIATE BOX(ES) WITHIN EACH OF THE BELOW CATEGORIES:

1 Which one of the below best describes your present status?

- 34-1 ☐ Employed, full time
- 35-1 ☐ Employed, part time
- 36-1 ☐ Unemployed, seeking employment
- 37-1 ☐ Military, full time active duty
- 38-1 ☐ Continuing education at higher level
- 39-1 ☐ Unavailable for employment (describe)

2 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the courses you have completed at our college?

40-
- 1 ☐ Yes, directly related
- 2 ☐ Yes, closely related
- 3 ☐ No

B. IF NO, have you been employed in an occupation related to the courses you completed at our college after you left our college?

41-
- 1 ☐ Yes, directly related
- 2 ☐ Yes, closely related
- 3 ☐ No

3 Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major/course

ETHNIC GROUP

44-
- 1 ☐ American Indian or Alaskan Native
- 2 ☐ Black, not of Hispanic Origin
- 3 ☐ Asian or Pacific Islander
- 4 ☐ Hispanic
- 5 ☐ White, not of Hispanic Origin

SEX

25-
- M ☐ Male
- F ☐ Female

THANK YOU FOR ASSISTING US IN OUR SURVEY. Please return this card in the enclosed pre-paid envelope as soon as possible.

FOR COLLEGE USE ONLY

Major Code ☐ ☐ ☐ ☐

Course Type Code

32-
- 1 ☐ Coop
- 2 ☐ Non-Coop
- 3 ☐ Preparatory

Term Date

Mo ☐ ☐ Yr ☐ ☐

Completion Code ☐

Target Pop. Code

63-
- 1 ☐ REG
- 2 ☐ DAVT
- 3 ☐ ESCP

Group Code

33-
- A ☐ O/T
- B ☐ UT
- C ☐ OTH
- D ☐ A/CE

Level Code

64-
- 1 ☐ Postsecondary
- 2 ☐ Adult

SPECIAL CODE ☐

In our efforts to provide you with worthwhile courses and services, we periodically conduct surveys to find out if you are satisfied with the courses completed at our college. Our records indicate that you completed one or more of our community service courses this past year. Because of this, we are requesting your response to the questions on the back of this card. It is only through your response that we can live up to your expectations.

Please make corrections to the information above if necessary.

FOR COLLEGE USE ONLY

DEPT. (46 48)		Group Code A ☐ O/T B ☐ UT C ☐ OTH D ☐ A/CE	Special Code ☐
CRS. (49-54)			
SECT. (55 ...)			

FUH-1-B (A/CE-PREP) SEM:

(COURSE NAME)

(COURSE NAME)

1 How would you rate the courses you completed at our college in relation to usefulness to you in your occupational area?

34-
- 1 ☐ Very good
- 2 ☐ Good
- 3 ☐ Fair
- 4 ☐ Poor
- 5 ☐ Very poor

2 Please check below if the course you completed at this college helped you in your occupational area in any of the following ways.

- 35-1 ☐ Helped to obtain new job
- 36-1 ☐ Helped performance on present job
- 37-1 ☐ Helped advance on present job
- 38-1 ☐ None of the above
- 39-1 ☐ Other (describe) ______

3 A. Do you plan to enroll in a course at our college in the future?

40-
- 1 ☐ Yes; when? →
  - 41-1 ☐ Next Fall
  - 42-1 ☐ Next Spring
  - 43-1 ☐ Next Summer
  - 44-1 ☐ Later date
- 2 ☐ No
- 3 ☐ Undecided

B. IF YES, in what type of course(s) do you plan to enroll?

45-
- 1 ☐ College credit course(s)
- 2 ☐ Other noncredit course(s)
- 3 ☐ Both

4 What course(s) would you like to see offered that we are not presently offering? ______

5 Approximately how many college credit hours have you previously completed:

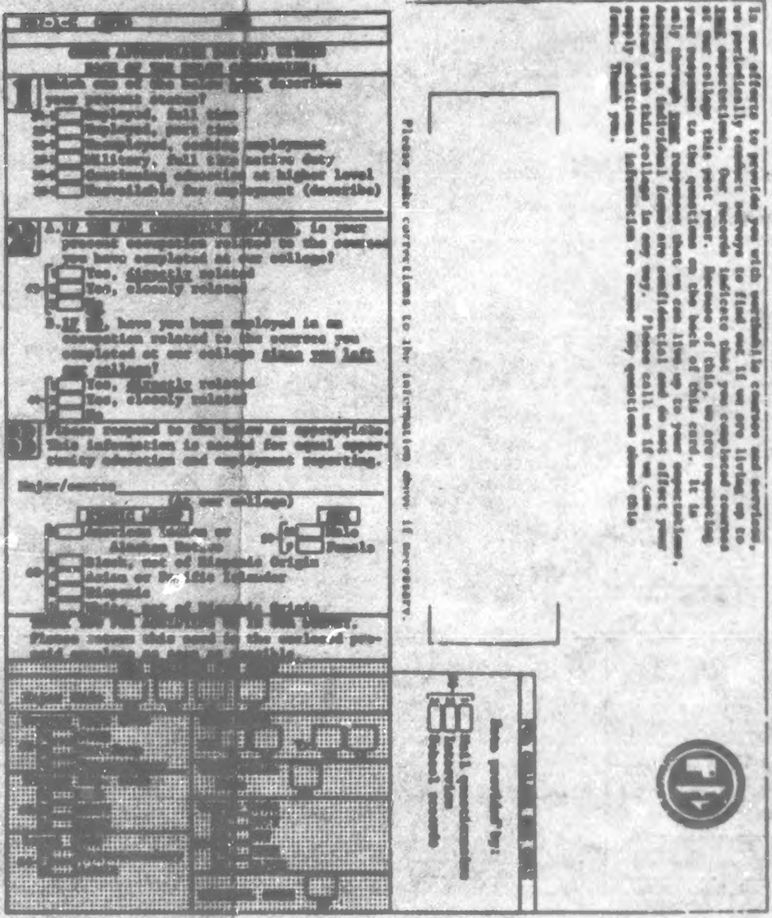
At our college?

46-
- 1 ☐ None
- 2 ☐ 1 - 10
- 3 ☐ 11 - 20
- 4 ☐ 21 - 30
- 5 ☐ 31 - 40
- 6 ☐ 41 - 50
- 7 ☐ 51 - 60
- 8 ☐ More than 60

At other colleges?

47-
- 1 ☐ None
- 2 ☐ 1 - 29
- 3 ☐ 30 - 69
- 4 ☐ 70 - 109
- 5 ☐ More than 109
- 6 ☐ Bachelor's degree
- 7 ☐ Above Bachelor's

THANK YOU FOR ASSISTING US IN OUR SURVEY! PLEASE RETURN THIS CARD IN THE ENCLOSED PRE-PAID ENVELOPE AS SOON AS POSSIBLE!



MSS-1-E SSN:

CHECK APPROPRIATE BOX(ES) WITHIN EACH OF THE BELOW CATEGORIES:

1 Which one of the below BEST describes your present status?
- ☐ Employed, full time
- ☐ Employed, part time
- ☐ Unemployed, seeking employment
- ☐ Military, full time active duty
- ☐ Continuing education at higher level
- ☐ Unavailable for employment (describe)

2 A. IF YOU ARE CURRENTLY EMPLOYED, is your present occupation related to the course you have completed at our college?
- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No

B. IF NO, have you been employed in an occupation related to the course you completed at our college since you left our college?
- ☐ Yes, directly related
- ☐ Yes, closely related
- ☐ No

3 Please respond to the below as appropriate. This information is needed for equal opportunity education and employment reporting.

Major/course____________
(At our college)

ETHNIC GROUP
- ☐ American Indian or Alaskan Native
- ☐ Black, not of Hispanic Origin
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ White, not of Hispanic Origin

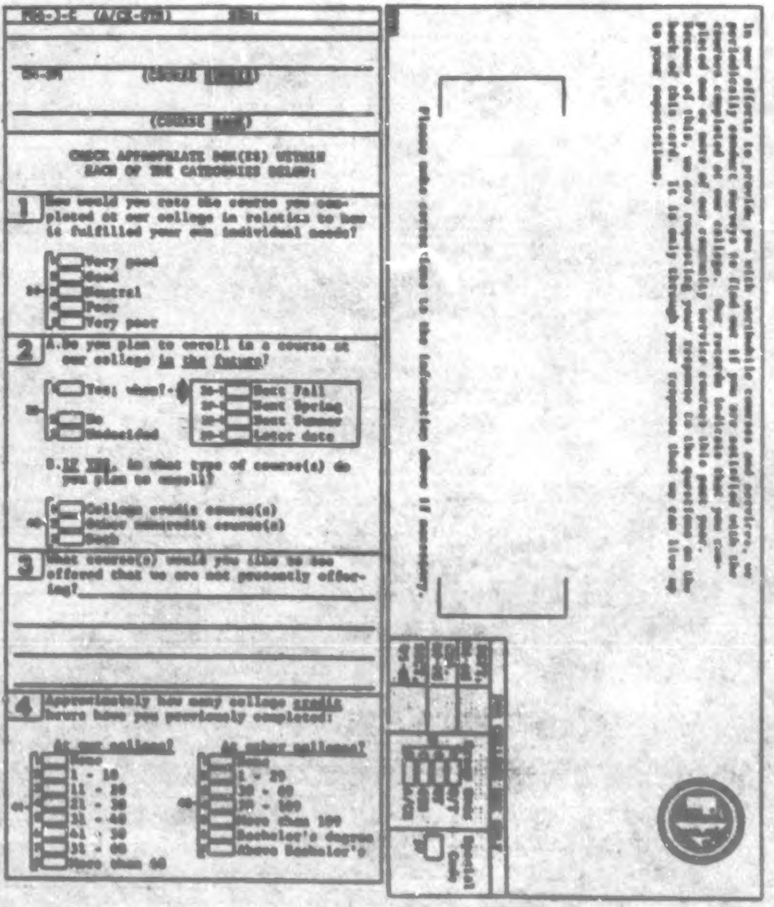
SEX
- ☐ Male
- ☐ Female

THANK YOU FOR RESPONDING TO THE SURVEY.
Please return this card in the enclosed prepaid envelope as soon as possible.

In our efforts to provide you with worthwhile courses and services, we periodically conduct surveys to find out if we are living up to YOUR expectations. Our records indicate that you completed courses at our college this past year. Because of this, we are requesting your response to the questions on the back of this card. It is only through YOUR responses that we can live up to your expectations. Answers to individual forms are confidential and do not affect your status with this college in any way. Please call us if we can supply additional information or answer any questions about this form. Thank you.

Please make corrections to the information above if necessary.

Data provided by:
- ☐ Mail questionnaire
- ☐ Interview
- ☐ School records



MSS-1-E (A/CE-??) SSN:

(COURSE ????)

(COURSE NAME)

CHECK APPROPRIATE BOX(ES) WITHIN EACH OF THE CATEGORIES BELOW:

1 How would you rate the course you completed at our college in relation to how it fulfilled your own individual needs?
- ☐ Very good
- ☐ Good
- ☐ Neutral
- ☐ Poor
- ☐ Very poor

2 A. Do you plan to enroll in a course at our college in the future?
- ☐ Yes; when? →
  - ☐ Next Fall
  - ☐ Next Spring
  - ☐ Next Summer
  - ☐ Later date
- ☐ No
- ☐ Undecided

B. IF YES, in what type of course(s) do you plan to enroll?
- ☐ College credit course(s)
- ☐ Other noncredit course(s)
- ☐ Both

3 What course(s) would you like to see offered that we are not presently offering?____________

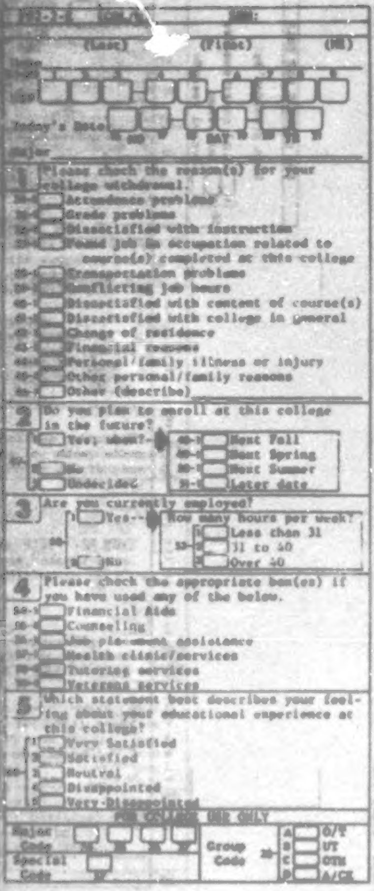
4 Approximately how many college credit hours have you previously completed:

At our college?	At other colleges?
☐ None	☐ None
☐ 1 - 10	☐ 1 - 29
☐ 11 - 20	☐ 30 - 60
☐ 21 - 30	☐ [illegible] - 100
☐ 31 - 40	☐ More than 100
☐ 41 - 50	☐ Bachelor's degree
☐ 51 - 60	☐ Above Bachelor's
☐ More than 60	

In our efforts to provide you with worthwhile courses and services, we periodically conduct surveys to find out if you are satisfied with the courses completed at our college. Our records indicate that you completed one or more of our community service courses this past year. Because of this, we are requesting your response to the questions on the back of this card. It is only through your response that we can live up to your expectations.

Please make corrections to the information above if necessary.

Special Code



[illegible] SSN:

Name (Last) (First) (MI)

SSN ☐☐☐-☐☐-☐☐☐☐

Today's Date ☐☐-☐☐-☐☐ MO DAY YR

Major

1 Please check the reason(s) for your college withdrawal.
- ☐ Attendance problems
- ☐ Grade problems
- ☐ Dissatisfied with instruction
- ☐ Found job in occupation related to course(s) completed at this college
- ☐ Transportation problems
- ☐ Conflicting job hours
- ☐ Dissatisfied with content of course(s)
- ☐ Dissatisfied with college in general
- ☐ Change of residence
- ☐ Financial reasons
- ☐ Personal/family illness or injury
- ☐ Other personal/family reasons
- ☐ Other (describe)

2 Do you plan to enroll at this college in the future?
- ☐ Yes; when? → ☐ Next Fall ☐ Next Spring ☐ Next Summer ☐ Later date
- ☐ No
- ☐ Undecided

3 Are you currently employed?
- ☐ Yes → How many hours per week? ☐ Less than 31 ☐ 31 to 40 ☐ Over 40
- ☐ No

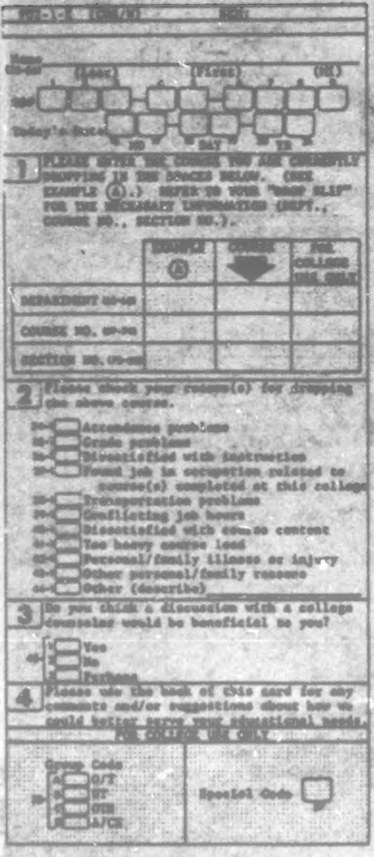
4 Please check the appropriate box(es) if you have used any of the below.
- ☐ Financial Aids
- ☐ Counseling
- ☐ Job placement assistance
- ☐ Health clinic/services
- ☐ Tutoring services
- ☐ Veterans services

5 Which statement best describes your feeling about your educational experience at this college?
- 1 ☐ Very Satisfied
- 2 ☐ Satisfied
- 3 ☐ Neutral
- 4 ☐ Disappointed
- 5 ☐ Very Disappointed

FOR COLLEGE USE ONLY

Major Code ☐☐☐☐ Group Code A ☐ O/T B ☐ UT C ☐ OTH D ☐ A/CE

Special Code ☐



[illegible] SSN:

Name (Last) (First) (MI)

SSN ☐☐☐-☐☐-☐☐☐☐

Today's Date ☐☐-☐☐-☐☐ MO DAY YR

1 PLEASE ENTER THE COURSE YOU ARE CURRENTLY DROPPING IN THE SPACES BELOW. (SEE EXAMPLE Ⓐ.) REFER TO YOUR "DROP SLIP" FOR THE NECESSARY INFORMATION (DEPT., COURSE NO., SECTION NO.).

	EXAMPLE Ⓐ	COURSE ↓	FOR COLLEGE USE ONLY
DEPARTMENT			
COURSE NO.			
SECTION NO.			

2 Please check your reason(s) for dropping the above course.
- ☐ Attendance problems
- ☐ Grade problems
- ☐ Dissatisfied with instruction
- ☐ Found job in occupation related to course(s) completed at this college
- ☐ Transportation problems
- ☐ Conflicting job hours
- ☐ Dissatisfied with course content
- ☐ Too heavy course load
- ☐ Personal/family illness or injury
- ☐ Other personal/family reasons
- ☐ Other (describe)

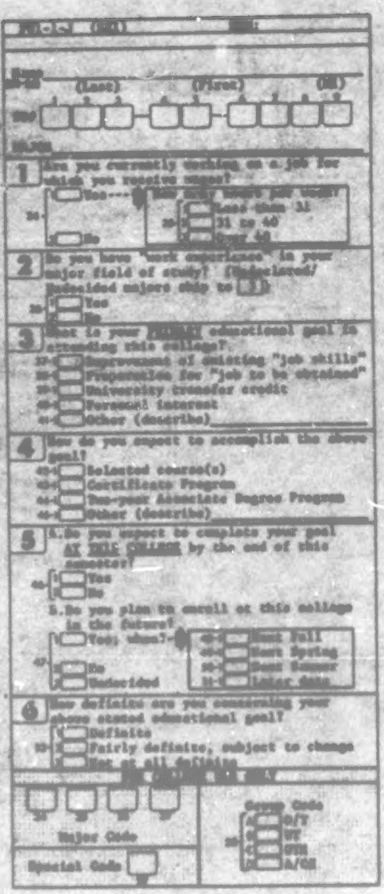
3 Do you think a discussion with a college counselor would be beneficial to you?
- 1 ☐ Yes
- 2 ☐ No
- 3 ☐ Perhaps

4 Please use the back of this card for any comments and/or suggestions about how we could better serve your educational needs.

FOR COLLEGE USE ONLY

Group Code A ☐ O/T B ☐ UT C ☐ OTH D ☐ A/CE

Special Code ☐



[illegible] SSN:

Name (Last) (First) (MI)

SSN ☐☐☐-☐☐-☐☐☐☐

MAJOR

1 Are you currently working on a job for which you receive wages?
- ☐ Yes → How many hours per week? ☐ Less than 31 ☐ 31 to 40 ☐ Over 40
- ☐ No

2 Do you have "work experience" in your major field of study? (Undeclared/Undecided majors skip to 3)
- 1 ☐ Yes
- 2 ☐ No

3 What is your PRIMARY educational goal in attending this college?
- ☐ Improvement of existing "job skills"
- ☐ Preparation for "job to be obtained"
- ☐ University transfer credit
- ☐ Personal interest
- ☐ Other (describe)

4 How do you expect to accomplish the above goal?
- ☐ Selected course(s)
- ☐ Certificate Program
- ☐ Two-year Associate Degree Program
- ☐ Other (describe)

5 A. Do you expect to complete your goal AT THIS COLLEGE by the end of this semester?
- 1 ☐ Yes
- 2 ☐ No

B. Do you plan to enroll at this college in the future?
- ☐ Yes; when? → ☐ Next Fall ☐ Next Spring ☐ Next Summer ☐ Later date
- ☐ No
- ☐ Undecided

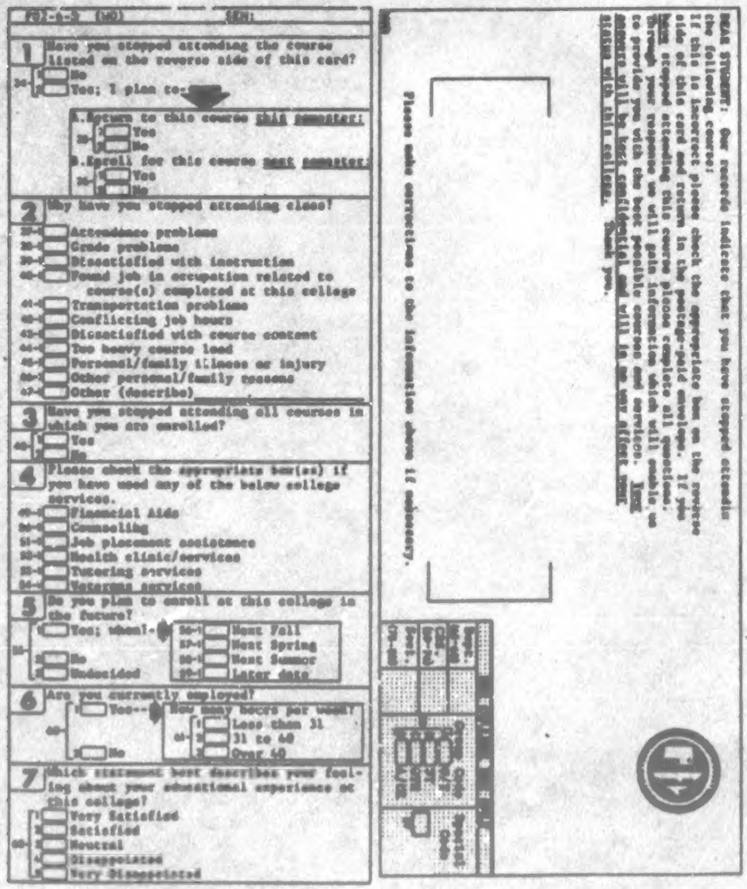
6 How definite are you concerning your above stated educational goal?
- 1 ☐ Definite
- 2 ☐ Fairly definite, subject to change
- 3 ☐ Not at all definite

FOR COLLEGE USE ONLY

☐☐☐☐ Major Code

Special Code ☐

Group Code A ☐ O/T B ☐ UT C ☐ OTH D ☐ A/CE



DEAR STUDENT: Our records indicate that you have stopped attendin the following course:
If this is incorrect please check the appropriate box on the reverse side of this card and return in the postage-paid envelope. If you have stopped attending this course please complete all questions. Through your response we will gain information which will enable us to provide you with the best possible courses and services. Your answers will be kept confidential and will in no way affect your status with this college. Thank you.

Please make corrections to the information above if necessary.

Dept.
Crs.
Sect. (75-80)
Group Code
Special Code

FSI-6-3 (MD) SSN:

1 Have you stopped attending the course listed on the reverse side of this card?
34- 1 ☐ No
2 ☐ Yes; I plan to:
A. Return to this course this semester:
35- 1 ☐ Yes
2 ☐ No
B. Enroll for this course next semester:
36- 1 ☐ Yes
2 ☐ No

2 Why have you stopped attending class?
37- ☐ Attendance problems
38- ☐ Grade problems
39- ☐ Dissatisfied with instruction
40- ☐ Found job in occupation related to course(s) completed at this college
41- ☐ Transportation problems
42- ☐ Conflicting job hours
43- ☐ Dissatisfied with course content
44- ☐ Too heavy course load
45- ☐ Personal/family illness or injury
46- ☐ Other personal/family reasons
47- ☐ Other (describe)________

3 Have you stopped attending all courses in which you are enrolled?
48- 1 ☐ Yes
2 ☐ No

4 Please check the appropriate box(es) if you have used any of the below college services.
49- ☐ Financial Aids
50- ☐ Counseling
51- ☐ Job placement assistance
52- ☐ Health clinic/services
53- ☐ Tutoring services
54- ☐ Veterans services

5 Do you plan to enroll at this college in the future?
55- 1 ☐ Yes; when?
56-1 ☐ Next Fall
57-1 ☐ Next Spring
58-1 ☐ Next Summer
59-1 ☐ Later date
2 ☐ No
3 ☐ Undecided

6 Are you currently employed?
60- 1 ☐ Yes
How many hours per week?
61- 1 ☐ Less than 31
2 ☐ 31 to 40
3 ☐ Over 40
2 ☐ No

7 Which statement best describes your feeling about your educational experience at this college?
62- 1 ☐ Very Satisfied
2 ☐ Satisfied
3 ☐ Neutral
4 ☐ Disappointed
5 ☐ Very Disappointed

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5. Federal Register, *Vocational Education Amendments 1976, Final Regulations* 42, No. 191 (October 3, 1977): 53865.

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7. R. N. Evans, et al., *Education for Employment: The Background and Potential of the 1968 Vocational Education Amendments* (Ann Arbor, Michigan: Institute of Labor and Industrial Relations, 1969), p. 8.

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GLOSSARY*

Auto Correlation: The situation in which one value of a variable in a time series is related to an earlier variable in that series and successive values of that series (Nemmers, 1966, p. 22).

Census Tract: Small areas into which large cities and adjacent areas have been divided for statistical purposes. Tracts are designed to be relatively uniform with respect to population characteristics, economic status, and living conditions. The average has about 4,000 residents.

City: An incorporated municipality where boundaries and powers of self-government are defined by a charter from the state in which the city is located (Webster's New World Dictionary, 1967).

Civilian Labor Force: All *civilians* sixteen years of age and over who are classified as either employed or unemployed.

Cohort: A group of individuals or vital statistics about them having a statistical factor (such as year of birth) in a demographic study (Webster's Third New International Dictionary, 1967, p. 441).

Collinearity: The characteristic of lying on or belonging to the same straight line (Good, 1973, p. 116).

Community Resources: The facilities, agencies, businesses, and persons outside the schools in the community that may be, or are, used by the schools for their education values, e.g., theaters, parks, playgrounds, libraries, art galleries, museums, zoos, planetariums, botanic gardens, universities, churches, scouts and other youth groups, service clubs, social service agencies, industries, and individuals, including representatives of various occupational groups, cultural groups, and civic organizations (Handbook VI, x 07 52.80).

Completer (of a Vocational Education Program): A student who finishes a sequence of courses, services, or activities designed to meet an occupational objective which purports to teach entry-level skills (Section 104.404, Vocational Education Amendment Act, 1976).

Consumer and Homemaking Programs: Includes instructional programs, services, and activities offered at all educational levels involved with or related to the skills and knowledges needed by consumers and in homemaking. They include, but are not limited, to the following:

1. Consumer education
2. Food and nutrition
3. Family living and parenthood education
4. Child development and guidance
5. Housing and home management
6. Clothing and textiles (Handbook VI, modified).

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* Unless otherwise indicated, these definitions were taken from: National Occupational Information Coordinating Committee, *Glossary of Terms and Definitions Used in An Occupational Information Program*, Draft Copy September 1978.

Convenience Sampling: Selection of units which are specified by non-project staff. For example, in the selection of schools the administrative personnel at the school may require that only certain class teachers or students be involved due to scheduling problems, timing problems, etc.

Cooperative Education: A combination program of vocational study and practice for persons through written cooperative arrangements between school and employer. The program offers instruction, including required academic courses and related vocational preparation, by alternating study in school and supervised on-the-job training (Vocational Education Amendment Act, 1967; Handbook VI, modified).

Correlation: The act or process of ascertaining the degree of relationship between two or more variables (Good, 1978, p. 142).

Correlation (Coefficient of): A measure of the interdependence between two variables. It is usually a pure number which varies between −1 and 1 with the intermediate value of zero indicating the absence of correlation, but not necessarily the independence of the variables (Kendall and Buckland, 1971, p. 34).

Correlation, Zero-order: Any correlation coefficient involving the relationship between two, and only two, variables (Good, 1973, p. 142).

County: The largest local administrative subdivision of most states (Webster's New World Dictionary, 1967).

Course: An instructional unit of area or field, or organized subject matter and related learning experiences usually provided for the instruction of students on a quarter, semester, year, or other prescribed length-of-time basis. It can be offered for credit or non-credit (Handbook VI, modified).

Cross-section Study : A status study concerned with conditions at a given point in time; a study making one set of measurements of different children from each age level. The averages for the variables for each group are calculated and plotted to depict the general growth patterns of each variable over all the age levels. It usually describes fewer factors than a longitudinal study, but includes more subjects (Good, 1973, p. 564).

Cyclical Unemployment: Unemployment resulting from a deficiency in aggregate demand which occurs when economic activity is such that actual output falls short of the economy's potential.

Data: Things known or assumed; facts or figures from which calculations can be inferred; basic elements of information (Webster's New World Dictionary, 1967).

Data Base: A collection of data files which contain information usually related to a common application.

Demographic Information: Describes the population within a specified geographic area in terms of number, age, ethnic composition, sex, work status, and/or other pertinent information.

Dual Labor Market: A dual labor market consists of primary and secondary occupations based on distinctions of race, sex, and age. Primary occupations are characterized by high job stability, clearly defined career patterns, and a high degree of work involvement. Secondary jobs are unstable and alienating. The dual theory cuts across traditional occupational categories and groups.

Duration of Unemployment: The period of time elapsed between a person's losing a job and obtaining another one.

Employed Labor Force: All persons who do any work at all as paid employees in their area, professional business, or firm; or who work fifteen hours or more as unpaid workers on a farm or in a business operated by a family member; and all persons who are not working but have jobs or businesses from which they are temporarily absent whether or not they received pay for time off, or were looking for other jobs (U.S. Census).

Employee: A person hired by another or a business, firm, etc. to work for wages or salary (Webster's New World Dictionary, 1967).

Employer Specifications: Required skills, knowledges, aptitudes, attitudes, training, or education, personal appearance, and job prerequisites (such as license, certificate, union membership, etc.) demanded or desired of an applicant by employer.

Employment Training: Training designed to enhance the employability of individuals by upgrading basic skills through such courses as remedial education, work-orientation, English as a second language, or training in the primary language of persons of limited English usage; may be offered as part of institutional training (Public Law 93-203, Amended).

Enrollment (High School Vocational Education Programs): Refers to persons enrolled in vocational education programs offered through an institution in grades 9-12 and for which credit is given toward a high school diploma. Any student enrolled in programs offered at the high school level, for which credit is not being received toward a high school diploma, should be classified in one of the adult categories (VEDS Progress, Enrollment, and Termination Report, 11/23/77).

Entrants (Labor Force): Persons who become part of the labor force, may be new to the labor force, or may be reentering after a period spent outside the labor force. For a state or area, entrants may include migrants in the state or area.

Entry Level: The lowest position in any promotional line (CETA, 1978 Amendments).

Entry Wage: The wage or salary paid to the new worker entering a job; the usual beginning wage paid by an employer for a specific occupation.

Family: One or more persons living in a single household who are related to each other by blood, marriage, or adoption.

Frictional Unemployment: Short-run employment often caused by voluntary transition between jobs.

Full-time Employed: Persons working thirty-five hours or more per week (United States Census).

Growth Demand: The increase (or decrease) in the total number of jobs available and expected due to industrial expansion or decline; may therefore be shown as either a positive or negative number.

Health Occupation Programs (Vocational Education): Organized instruction and planned experience designed to prepare pupils for occupational objectives concerned with assisting qualified personnel in providing diagnostic, therapeutic, preventative, restorative, and rehabilitative services to people, including understanding and skills essential to provide care and health services to patients (Handbook VI, modified).

Hiring Specifications: Requirements established by the employer which must be possessed by the applicant prior to employment. Examples of these are union membership, license, certification of education, health, attitude, and appearance.

Home Economics Program: The group of related courses or units of instruction organized for the purpose of enabling pupils to acquire knowledge and develop understanding, attitudes, and skills relevant to (a) personal, home, and family life, and (b) occupational preparation, using the knowledge and skills of home economics. The subject matter of home economics includes, in addition to that which is unique to the area, concepts drawn from the natural and social sciences and the humanities (Handbook VI).

Income: Population characteristic referring to income level of the population of a specific geographic area; may be designated by dollar groupings or by status, e.g., below poverty; may be shown as personal (individual) income, by family, or other aggregates, viz., rural, U.S. urban, annual or other time-period averages.

Industry: The production activities of the United States economy, a private corporation, the public, and/or non-profit productive enterprise engaged in producing goods or services; the basic unit of classification based on the principal activity of such an enterprise.

Instructional Training (CETA): Training conducted in an institutional setting and designed to provide individuals with the technical skills and information required to perform a specific job or group of jobs (Public Law 93-203, as amended).

Internal Labor Market: An administrative unit, such as a manufacturing plant, within which the pricing and allocation of labor are governed by a set of administrative rules and procedures. The rules give certain rights and privileges not available to workers outside the organization or occupation. In effect, workers already in the organization have exclusive rights to specific types of jobs to be filled, and they may also have continuity of employment with no direct competition from workers outside the firm or occupation.

Job: A position or employment situation; work, either paid or unpaid.

Job Development (SESA): The process of soliciting a public or private employer's order for a specific applicant for whom no suitable opening is a file. May also refer to solicitation of jobs for groups of applicants who may be available in large numbers (CETA Handbook).

Job Duties: The specific tasks the worker performs to accomplish the overall job purpose of an occupation (DOT modified).

Job Opening (SESA): A single job vacancy for which the employmant service office has on file a request from an employer to select and refer an applicant or applicants (CETA Handbook).

Job Skills: Competencies imparted to or possessed by persons to prepare to make them acceptable for employment (paid or unpaid) in a specific occupation or a cluster of closely related occupations in an occupational field (Handbook VI, modified).

Job Vacancies: Actual jobs which are immediately available for filling, and for which the employer is actively trying to find or recruit workers from outside the firm.

Labor Demand (Current): Total employment plus the number of job vacancies existing, may be referred to in terms of industry demand or occupational demand.

Labor Demand (Projected): The number of job opportunities or job openings expected to occur over a given period of time because of change in employment levels and the need to replace workers who die.

Labor Force Participation Rates: The percent of the total population sixteen years of age or older which is actually in the labor force (i.e., meet the criteria of employed and unemployed).

Labor Force (Total): All persons sixteen years of age or over who meet the criteria of being employed or unemployed or are members of the armed forces either in the United States or abroad.

Labor Market: The entire set of interlinked institutions and processes that determine the flow of the job opportunities and labor supply in both the short and long run.

Labor Market Area (see Standard Metropolitan Statistical Area) : An economically integrated unit in which workers may readily change jobs without changing their place of residence. The boundaries depend primarily on economic and geographic factors, and not on political jurisdictions. Many labor market areas are also SMSAs.

Labor Supply: The number of persons working or available for work, i.e., the employed plus the unemployed; may refer to the current situation to expectations for the future.

Labor Surplus: A labor market area where the average unemployment rate for the civilian labor force for the reference period is 120 percent of the national average unemployment rate or higher as determined by the Bureau of Labor Statistics or where the rate is 10 percent or higher. No labor market shall be classified as a labor surplus area if its average unemployment rate for the reference period is less than 6.0 percent (DMP-4a, Section 654.4).

Labor Turnover: Gross movement of workers into and out of the work force of an establishment; may also refer to such change within an industry group or division.

Layoffs: Termination of a worker from a job by the employer initiated without prejudice of the worker; usually caused by lack of work, decrease in production, decline in purchases of products or services produced by the employing firm.

Leaver (Program): A student who has been enrolled in and has attended a vocational education program and has left the program without completing it; also includes those who leave the program voluntarily before completion, but leave with marketable skills, i.e., will be capable of obtaining and performing the job for which preparation was directed (Vocational Education Act, modified Section 104.404).

Local Education Agency: Any public authority legally constituted within a state to perform a service function for public elementary or secondary schools in a city, county, township, school district, or other political subdivision of a state. (Section 160 c.2, P.L. 93-380); any public education institution or agency having administrative control and direction of a vocational education program (Vocational Education Act, Section 108[9]).

Longitudinal Study: A study that follows a case or group of cases over a period of time; includes genetic study, follow-up studies, growth studies, and experimental growth studies. Its purpose may be to gather normative data on growth, to plot trends (as of attitudes), or to observe the effects of special factors (as in an experiment) (Good, 1973, p. 565).

Management Information: Data, statistics, information used for free and objective decision processes and policy formation.

Management Information System: An organized method of providing past, present, and projected information relating to internal operations and external intelligence which supports the planning, control, and operational function of an organization by providing decision makers with uniform information in the proper time frame (Kennevan, Walter, "MIS Universe," *Data Management* Vol. 8, September 1970, pp. 62-64).

Marketable Skills: Competencies in a specific occupation or cluster of related occupations obtained by persons through training or other job preparation which meet the hiring specifications of local employers.

Migration (Labor Force): Change in geographic location of residence by persons classified as being in the labor force. Interstate migrants are persons who move across state lines; intrastate migrants are persons who move to a different county (or town) in the same state.

Multicollinearity: In regression analysis, a situation in which there exists a linear relation connecting the predicted ("Independent") variables. The coefficients of the regression of these variables are then indeterminate, and their standard errors become infinite (Kendall and Buckland, 1971, p. 99).

Nonresponse: In sample surveys, the failure to obtain information from a designated individual for any reason (death, absence, refusal to reply). The proportion of such individuals of the sample aimed at is called the nonresponse rate. It would be better, however, to call this a "failure" rate or a "non-achievement" rate and to confine "nonresponse" to those cases where the individual concerned is contacted but refuses to reply or is unable to do so for reasons such as deafness or illness (Kendall and Buckland, 1971, p. 105).

Not in the Labor Force: All civilians sixteen years old and over who are not classified as employed or unemployed. The group consists of students, retired workers, homemakers, seasonal workers during the "off" season, inmates of institutions, disabled, and unpaid persons working less than fifteen hours a week in a family business or farm.

Occupation: The name or title of a job which identifies and specifies the various activities and functions to be performed.

Occupational Mobility: The transfer of workers from one occupation to another. It may be through advancement to a more difficult or complex job or among relatied occupations or "job clusters" or among unrelated occupations.

Occupational Objective (Education): The expected outcome of training and other preparation as stated by an individual student. The objective usually is stated in terms of a specific occupational title.

Office Occupations (Education): Combinations of courses and practical experience organized into programs of instruction to prepare persons for selected office occupations. Included is a variety of activities, such as recording and retrieval of data, supervision and coordination of office activities, internal, and external communication, and the reporting of information (Handbook VI, modified, 14.00 00 00 00).

Outliers: In a sample of observations it is possible for a limited number to be so far separated in value from the remainder that they give rise to the question whether they are not from a different population, or that the sampling technique is at fault (Kendall and Buckland, 1971, p. 109).

Pilot Survey: A survey, usually a small scale, carried out prior to the main survey, primarily to gain information to improve the efficiency of the main survey. For example, it may be used to test a questionnaire, to ascertain time taken by a field procedure, or to determine the most effective size of sampling unit (Kendall and Buckland, 1971, p. 114).

Placement: A position obtained by a person in an area of unsubsidized employment either as a result of his/her own efforts after intake service or by referral to a job by the school or public employment service.

Placement Service (Education): Activities organized to help pupils in appropriate educational situations while they are in school, in appropriate part-time employment while they are in school, and in appropriate educational and occupational situations after they leave school, and to facilitate pupils' transition from one educational experience to another. This may include, for example, admissions counseling, referral services, assistance with records, and follow-up communications with employers concerning the performance of former pupils (Handbook VI, x 32 21.21).

Probability Sampling: Any method of selection of a sample based on the theory of probability. At any stage of the operation of selection, the probability of any set of units being selected must be known. It is the only general method which can provide a measure of precision of the estimate. Sometimes the term "random sampling" is used in the sense of "probability sampling" (Kendall and Buckland, 1971, p. 119).

Program: Program (or project) is defined to include *instructional programs* as well as *legislative purpose programs.* An instructional program is a planned sequence of courses, services, or activities designed to meet an occupational objective. These programs are defined by the OE six-digit codes and include industrial arts programs and nongainful consumer and homemaking programs. A legislative purpose program is a course, service, or method of instruction which does not necessarily provide vocational skill training as a primary focus, but which formally organized by the state in response to legislative priorities.*

Program Leavers (Education): Students who have terminated their training in a program prior to normal completion time, but who have gained marketable skills; also applies to students who withdraw from the curriculum and remain in school or withdraw from the curriculum and leave school without marketable skills, or students who withdraw from junior colleges, adult education programs, or other instructional programs prior to completion.

Quantitative Data: As contrasted with "qualitative" data, should relate to data in the form of numerical quantities such as measurements or counts. It is sometimes, less exactly, used to describe material in which the variables concerned are quantities, e.g., height, weight, price as distinct from data deriving from qualitative attributes, e.g., sex, nationality, or commodity (Kendall and Buckaldn, 1971, p. 121).

Quit: To leave a job. A person quits when he/she initiates the termination of employment.

Related Occupations: Occupations which are determined to be related on the basis of similar job or worker characteristics required for successful worker performance. Example characteristics are experience, training and education; duties performed with tools, machines, and other aids and materials used on the job.

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* Source: Policy Memorandum — BOAE DSVPO—FY9-2 Department of Health, Education and Welfare, Office of Education, Bureau of Occupational and Adult Education. Sent by: Charles H. Buzzell, Associate Commissioner BOAE. April 1979.

Replacement Needs: The number and kind of job openings expected to be available to replace workers who die, retire, leave the area, leave the labor force, or transfer to different occupations.

Rural (Farm and Nonfarm Residence): The rural population is subdivided into the rural-farm population, which comprises all rural residents living on farms, and the rural-nonfarm population, which comprises the remaining rural population. As in the 1960 census, the farm population consists of persons living on places of ten or more acres from which sales of farm products amounted to $50 or more in the preceding calendar year or on places of less than ten acres from which sales of farm products amounted to $250 or more in the preceding year (U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of Census, App-3).

Sampling Frame: The list, or reasonable facsimile, of elements from which a probability sample is selected. Lists include organization lists, high schools, industries, etc. (Babbie, E.R., *The Practice of Social Research* 2nd ed., Belmont, California: Wadsworth Publishing Co. Inc., 1979, p. 175).

Sampling Unit: An element or set of elements considered for selection in some stage of sampling. Examples of sampling units are census blocks, households, adults, etc. Primary sampling units, secondary sampling units, and final sampling units would be used to designate the successive stages (Babbie, E.R., *The Practice of Social Research* 2nd ed., Belmont, California: Wadsworth Publishing Co., Inc., 1979, p. 175).

Secondary Education: Equated with persons in high school.

Secondary School: A school comprising a span of grades beginning with the next grade following an elementary or middle school and ending with or below grade twelve (Handbook VI, X 0242.30).

Specific Vocational Preparation (SVP): The amount of time required to learn the techniques, acquire information, and develop the facility needed for average performance in a specific job-related situation. This training may be acquired in a school, work, military, institution, or a vocational environment. It does not include the orientation training required by a fully qualified worker to become accustomed to the special conditions of any new job. Specific vocational training includes training given in any of the following circumstances:

1. Vocational education
2. Apprentice training
3. In-plant training
4. On-the-job training
5. Essential experience in other jobs.

Standard Metropolitan Statistical Area (see Labor Market Area): A county or group of contiguous counties containing at least one city with a population of 50,000 or more and which is economically and socially integrated with the central city. The boundaries may cross state lines. All SMSAs are coterminous with labor market areas.

State: Any of the territorial and political units that together constitute a federal government, as in the United States (Webster's New World Dictionary, 1967).

State Board: A state branch designated or created by state law or the sole state agency responsible for the administration of vocational education or for the supervision of the administration of vocational education in the state (Vocational Education Amendments, 1976).

State Educational Agency: State Board of Education or other agency or officer primarily responsible for the state supervision of public elementary and secondary schools, or, if there is no such officer or agency, an officer or agency designated by the governor or by state law (Education Code Amendments).

Stratified Disproportionate Sampling: The same as stratified proportionate sampling except that the size of sample is not proportionate to the size of sampling unit but is dictated by analytical considerations or convenience.*

Stratified Proportionate Sampling: The selection from every sampling unit (at other than last stage) a random sample proportionate to size of sampling unit.*

Structural Unemployment: Unemployment which results from imbalances between the occupational needs of an economy and the skills of available workers. It can be caused by technological change in the production process resulting in occupational obsolescence, irrationality of employers' response to personal characteristics of the worker, or skill deficiencies of workers causing them to be unemployed even though job vacancies exist.

Student (Vocational Education): An individual with a vocational objective who is enrolled in a vocational education program leading to entry or progress in a chosen occupational field.

Surplus Occupations: Those occupations for which the supply of workers available and capable of filling the job exceeds demand; the number of jobs available in the occupation. Current surplus occupations are those for which there are more qualified applicants than employers wish to hire at the prevailing wage rate. Projected surplus occupations are those which the number of entrants is expected to be greater than the number of expected job openings.

Technical Education: A program of studies designed primarily to prepare persons for work in the occupational area between that of the skilled and the professional employee. This includes programs for training and retraining and leads to qualification for work as a technician (Handbook VI, modified X 21 43.40).

Trade and Industry Programs (Vocational Education): The branch of vocational education concerned with preparing persons for initial employment, or for upgrading or retraining workers in a wide range of trade and industrial occupations. Such occupations are concerned with layout, designing, producing, processing, assembling, testing, maintaining, searching, or repairing any product or commodity. Instruction is provided in basic manipulative skills as well as safety, judgment, and related occupational information in mathematics, drafting, and science required to perform successfully in the occupations and through a combination of shop or laboratory experiences simulating those found in industry and classroom learning. Included is instruction for apprentices in apprenticable occupations or for journeymen already engaged in a trade and industrial occupation. Also included is training for service and certain semiprofessional occupations considered to be trade and industrial in nature (Handbook VI, 1700 00 00 00).

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* Source: Ackoff, Russell L. *The Design of Social Research.* Chicago: The Unversity of Chicago Press, 1953, p. 124.

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Bachman, Jerald G.; Green, Swayer; and Wirtanen, Ilona D. *Dropping Out: Problem or Symptom? Youth in Transition Volume III*, Ann Arbor: Institute for Social Research, The University of Michigan, 1967. (ED 059 333)

This report, which specifically addresses the problem of dropping out, is the third in the series of five Youth in Transition publications. The report provided a comprehensive view of the completed longitudinal study of the Youth in Transition. This four-year longitudinal study of adolescent boys was designed: (1) to investigate growth and change, including dimensions of mental health, the self-concept, values and attitudes, plans and aspirations, and behaviors; and (2) to determine the extent to which the growth and change are related to school and work environments.

A total of 2,213 tenth-grade boys were selected from 87 high schools to participate in the base-year survey conducted in the fall of 1966. Data collection techniques included personal interviews, questionnaires, and standardized tests (Guide Test of Intelligence, General Aptitude Test Battery, and Gates Test of Reading Comprehension). Three follow-up surveys were conducted:

1. First follow-up (Spring, 1968): At the end of eleventh grade, participants were interviewed and given questionnaires to complete.
2. Second follow-up (Spring, 1969): Prior to graduation from high school, participants were only required to complete a questionnaire.
3. Third follow-up (Summer, 1970): One year after graduation from high school, participants were again interviewed individually and given questionnaires to complete.

The following conclusions were drawn from this phase of the study:

1. Dropping out is a symptom of other problems and should be treated as such.
2. The campaign against dropping out should be curbed.
3. Problems which lead to dropping out evidence a mismatch between certain individuals and the high school environment. These problems need to be solved early in the student's high school career.
4. Twelve years of uninterrupted schooling are not necessarily ideal for everyone.
5. The range of educational options for young people between the ages of sixteen and eighteen should be broadened.

Concerning the entire study, different emphases and statistical analyses were presented in the five volumes of the Youth in Transition. They are: Volume I—Blueprint for Longitudinal Study of Adolescent Boys, 1967, ED 026 463; Volume II—Impact of Family Background and Intelligence, 1970, ED 061 414; Volume III—Dropping Out: Problem or Symptom?, 1971, ED 059 333; Volume IV—Strategy for Longitudinal Analysis, 1972, ED 064 440; and Volume V—Young Men and the Military, 1972, ED 972 185.

Center for Human Resources Research. *The National Longitudinal Surveys: Handbook.* Columbus: The Ohio State University, November 1977.

This handbook is a comprehensive guide to the National Longitudinal Surveys of Labor Market Experience (NLS). The handbook describes the layout of the computer tapes, explains the documentation, and presents a number of caveats for data use. Both the data file and the handbook are available for $300 at the Center for Human Research.

The National Longitudinal Surveys of Labor Market Experience were initiated in 1965. Approximately 5,000 individuals were drawn for each cohort: men (ages 45-49), women (ages 30-44), and boys and girls (ages 14-24). Thirty percent of the respondents were black. Interviews were conducted six times annually with each cohort for the first five years. Then, the older groups were surveyed biannually, and the younger groups were interviewed annually. Beginning in 1971, a new set of longitudinal data including 6,000 young women and 6,000 young men, ages 14-21, were drawn.

Different weights were given to race, sex, age, and nonrespondents. The following variables were included in the study:

1. *Labor Market Experience:* Current labor force and employment status, characteristics of current or last job, work experience prior to initial survey, work experience since previous survey.
2. *Human Capital and Other Socioeconomic Variables:* Early formative influences, migration, education, training outside regular school, health and physical condition, marital and family characteristics, financial characteristics, military service, job attitude, work attitude, other social psychological variables, retrospective evaluation of labor market experience, retirement.
3. *Environmental:* Size of local labor force, local unemployment rate.

Hilton, Thomas L. *A Study of Intellectual Growth and Vocational Development*. Final Report. Princeton, New Jersey: Educational Testing Center, March 1971. (ED 056 063)

This final report summarizes all phases of a completed large-scale longitudinal study, Growth Study, investigating the intellectual growth and vocational development of students from grades five through twelve. The objectives of the study are:

1. To obtain the description of vocational curriculum and the student characteristics
2. To trace the intellectual development of vocational students
3. To investigate the interaction of vocational plan, academic preparation, individual characteristics, and subsequent educational or vocational involvement
4. To relate the student's secondary education to his/her postsecondary education
5. To develop a vocational development model for grades five through twelve
6. To develop the statistical method for analyzing data on student development
7. To relate the social variables with each student's educational decisions and school achievement
8. To investigate causes of withdrawal
9. To compare the achievement of black and white students in different academic programs.

Phase I, the pilot study, was conducted on one selected school during the 1966-1967 academic year. Phase II was launched in the fall of 1967. A total of 32,000 students in grades 5, 7, 9, and 11 from 27 participating schools in 17 different communities were randomly selected and surveyed. The first follow-up was conducted. The sample consisted of 93 percent of the original sample and 7 percent of the new sample. The total sample grew to nearly 40,000 student subjects. There was no loss of sample over the four years follow-up surveys.

Approximately fifteen hours were required for each Growth Study test administration. Two instruments were specifically designed for this study: the Test of General Information (TGI) to identify nonacademic factors, and the Background and Experience Questionnaire (BEQ) to obtain information about student's activities. In addition, the following standardized instruments were used: the School and College Ability Tests (SCAT), the Sequential Test of Educational Progress (STEP), the Preliminary Scholastic Aptitude Test (PSAT), and achievement tests for English composition and American history.

The following findings were drawn from the study:

1. The achievement of black students was significantly below that of white students.
2. None of the three variables—academic aptitutde, socioeconomic status, and curriculum—was highly related to postsecondary educational attainment.
3. Compared to other nonacademic students, vocational students scored well in the Sequential Test of Educational Progress for Science.
4. Schools with students from families of higher socioeconomic status had consistently higher achievement.
5. Growth in student achievement from fifth to seventh grade appeared to have no bearing in the dropout study.
6. The conventional high school curriculum structure accommodated different levels of student proficiency.

Knopf, Lucille. *Graduation and Withdrawal from RN Programs: A Report of the Nurses Career Pattern Study*. Bethesda, Maryland: Health Resources Administration, Division of Nursing. November 1975. (ED 132 385)

This study focused on the reasons for student's withdrawal from three registered nursing (RN) programs: the Associate Degree program, the Diploma program, and the Baccalaureate program. The purpose of the study was to supply a national data base which would be useful for comparison with local studies of nursing students and graduates.

The study began in the fall of 1962. The students who first enrolled in the three RN programs in 1962, 1965, and 1967 were initially included in the sample. All students were divided into four groups based on combinations of race and marital status. A total of 42,730 students were studied. Follow-ups were conducted after one, five, ten, and fifteen years. Only the first follow-up of 1965 cohorts was canceled.

Follow-up questionnaires were designed to obtain the following data: demographic background, socioeconomic characteristics, prior educational background, reasons for withdrawal, activities after withdrawal, and current employment status. School personnel were responsible for distributing questionnaires to former students. Reminders (postcards, certified letters, etc.) were mailed three times at three-week intervals to increase response rate.

The study found that most withdrawals occurred during the first year of the program. In general, students who withdrew were single, had ethnic backgrounds other than white, came from families with lower socioeconomic status, and had lower high school achievement records. Withdrawals showed continued interest in the RN programs. Some of them re-enrolled in a RN program; some indicated returning to school in the future; some were taking preparatory courses for program acceptance; and a fairly large portion were employed in nursing and therapeutical fields.

Project TALENT, *The Project TALENT Data Bank: A Handbook.* Palo Alto, California: American Institutes for Research, April 1972.

This handbook provides a comprehensive view of Project TALENT. In April 1959, project TALENT was initiated with a contract under provision of Public Law 531, passed by Congress in 1954. The purpose of this large-scale, long-range educational research project was to determine the best methods for the identification, development, and utilization of human talents. Within this broad context, Project TALENT had the following specific goals:

1. To obtain a national inventory of human resources
2. To develop a set of standards for educational and psychological measurements
3. To provide a comprehensive counseling guide indicating the patterns of aptitute and ability which predict success and satisfaction in various careers
4. To formulate a better understanding of how young people choose and develop in their life work
5. To identify the educational and life experiences which better prepare students for their life work.

The study was launched in 1960 with a large, representative sample of high school students. Roughly 400,000 ninth, tenth, eleventh, and twelfth graders from 987 senior and 238 junior high schools were stratified. The categories for selection were based on retention ratio, school size, and geographic areas. The four follow-ups were scheduled for 1961, 1966, 1971, and 1980.

Various tests and questionnaires were given to students in 1960. The tests are grouped under the following headings:

1. An information test covering knowledge acquired in and out of school (38 separate scores and 4 composites)
2. Mathematical aptitude and ability tests (3 separate scores and 3 composites)
3. An English test (5 subscores and a total score)
4. Tests of speed and accuracy in various tasks (4 tests)
5. Various other tests of specific aptitudes and abilities (10 tests).

In addition to the tests, a large number of a priori scales were developed to compile data concerning high school education and educational plans, work experience, general information, and postsecondary education. The following questionnaires were designed for the study: (1) the Student Information Blank; (2) the Interests Inventory (17 scales); and (3) the Student Activities Inventory (10 temperament scales). School personnel were accordingly surveyed with the General School Characteristics Questionnaire and the Guidance Program Questionnaire.

Project TALENT had developed a large number of computer programs especially well-suited for processing large numbers of variables and large numbers of data records. Programs are available for virtually all types of standard statistical analyses as well as for record sorting, merging, and recording.

The eleventh-year follow-up has been completed. The major TALENT publications were listed as follows: (1) *Design for a Study of American Youth* (1962); (2) *Studies of the American High School* (1962); (3) *Studies of a Complete Age Group—Age 15* (1963); (4) *The American High School Student* (1964); (5) *Project TALENT—One-Year Follow-up Studies* (1966); (6) *Measuring Adolescent*

Personality (1966); (7) *The High School Years—Growth in Cognitive Skills* (1967); (8) *A Factor Analysis of Project TALENT Tests and Four Other Test Batteries* (1968); (9) *Predicting Development of Young Adults* (1968); (10) *Effects of Negro Density of Student Variables and the Post-High School Adjustment of Male Negros* (1968); (11) *Interpreting Canonical Correlations: Theory and Practice* (1968); (12) *Five Years After High School: Appendix II* (1971); and (13) *Progress in Education: A Sample Survey* (1971). At present a total of 124 substudies obtain their data from Project TALENT.

Research Triangle Institute. *National Longitudinal Study, Third Follow-up Survey, Final Methodology Report.* Edited by Jay R. Levinsohn and Katherine C. McAdams. Research Triangle Park, North Carolina: Center for Educational Research and Evaluation, December 1978.

This is a report of the third follow-up survey of the National Longitudinal Study (NLS) conducted in 1976-1977. This report also summarized the base year survey and three follow-up surveys. Referred to as the Class of '72, this study was designed in accordance with recommendations by the National Center for Educational Statistics for data needs of educational policymakers and researchers.

The following needs may be met by NLS data: (1) to clarify choices and alternatives for postsecondary education, vocational preparation, and career planning; (2) to trace youth progress in relation to prior education and family background; (3) to create a data base for informed and objective policy decision at the federal level; and (4) to provide researchers and policymakers with periodic summaries of data.

In the spring of 1972, 19,144 seniors from 1,069 public, private, and church-affiliated high schools participated in the base-year survey conducted by Educational Testing Services (ETS). Each student in the sample completed a questionnaire relating to family background, educational and work experiences, plans, aspirations, attitudes, and opinions. Each student also completed a test measuring both verbal and nonverbal abilities. Data about high school curriculum, grade point average, credit hours in major courses, and position in ability groupings, remedial-instruction record, involvement in certain federally supported programs, and scores on standardized tests were also obtained from students' cumulative records. Two other data instruments were the School Questionnaire and the Counselor Questionnaire.

The first follow-up was launched in October 1973. A new sample of 4,439 students was added to the first sample. A new questionnaire, Form A, was mailed to each student who responded to the base-year Student Questionnaire. Form B was mailed to those who missed the base-year survey. Both questionnaires called for general information, education and training, work experience, military service, and background information. Of the 22,654 students surveyed, 65.7 percent mailed their completed questionnaires, and 34.3 percent were followed up with personal interviews.

In October of 1974, the second follow-up was started. The questionnaire used was similar to the first follow-up questionnaire with two sections added concerning family status and activities and personal opinions. Of 20,872 completed instruments 72.1 percent were obtained by mail and 17.9 percent were collected by personal interviews.

The third follow-up began in October of 1976. The questionnaires were mailed to the last known addresses of the sample members. Some 20,092 members completed the third follow-up survey questionnaire, 80 percent by mail and 20 percent by personal interviews. The retention rate of those samples who completed all three student instruments was 94.7 percent.

The high return rate of the completed instruments was attributed by newsletters, mailed reminders, three-dollar incentives, thank-you postcards, and telephone follow-up contacts with nonrespondents. Data were summarized and keyed directly into magnetic tapes.

This report contains preliminary analyses and results of the third follow-up. The results were summarized concerning various aspects of postsecondary education, work, family, and community activities and attitudes of the study population.

Sprongel, Donald P., and Tomey, E. Allen. *Longitudinal Impact Assessment of the 1971-1972 Vocational Exploration in the Private Sector Program.* St. Louis, Missouri: Center for Urban Problems, St. Louis University, July 1974. (ED 143 689)

This study focused upon the assessment on the experimental Vocational Exploration in the Private Sector Program (VEPS). The VEPS program was designed to increase students' motivation, to help students in transition from school to the world of work, and to provide students with work experience.

Pre- and post-test procedures were conducted with both control and experimental groups with multiple post-test observations. Both groups were pretested during the 1970-1971 academic year. The experimental group then participated in the VEPS-I program in 1971-1972. Follow-up tests were given to both groups during 1971-1972, 1972-1973, and at the end of 1973.

The control group, totaling 151 students, was selected from all sixteen-year-old probable dropouts who participated in Neighborhood Youth Corps (NYC) in the summer of 1971 and 1971-1972. The experimental group consisted of a total of 272 students who completed the VEPS-I program in the six cities. T-test was the major statistical method to compare pre-test and post-test for the two groups.

The findings of the study showed that VEPS-I program had a significant positive impact on students' achievement and attendance. Although participants in the experimental group achieved higher employment rates upon graduation, there was no significant difference between the dropout rates of both groups.

Boss, Richard D., and Bodine, Marie W. "Manpower Training in Wisconsin: A Longitudinal Study." *Technical Education News,* March/April 1975, pp. 12-18, 23.

This article summarized the longitudinal studies of the Wisconsin institutional job training programs funded under the Manpower Development and Training Act (MDTA) from 1962 to 1973. The purpose of the study was to investigate the effectiveness of the twelve-year training programs.

A total of 494 trainees who completed the training programs were surveyed. The administrators and the instructors who served in the training center were also in the survey sample.

Data collection techniques involved mainly personal interviews and questionnaires. Questions addressed program cost, administrative accomplishment, program facilities and equipment, trainees' income profiles, and trainees' opinions on the training employment and job security.

According to this report, nearly two-thrids of the trainees described the MDTA training program worthwhile. The instructors were rated higher than the teachers in grade or high schools. Although the trainees needed more training for their present jobs or other desired occupations, completers and non-completers seemed to benefit from the training program in realizing their potential.

Kapes, Jerome T.; Enderlein, Thomas E.; and Martin, Randall. *A Longitudinal Study of Vocational Development and Program Evaluation: Implications for Curriculum Planning and Vocational Guidance,* final report. University Park: Department of Vocational Education, Pennsylvania State University, August 1974.

This final report summarized the vocational development study (VDS) conducted in Pennsylvania during 1968-1974. The report provided summaries on twenty monographs of the VDS study. The purpose of the VDS study was to measure the long-term effects of the vocational high school experience. The study attempted to determine how students' attitudes and preferences about their eventual career changed as they moved through high school and beyond. An attempt was also made to determine a means of predicting students' success after leaving high school, in accordance with vocational development during high school.

The ninth-grade enrollment in three medium-sized school districts in Pennsylvania was studied. This included approximately 1,200 ninth-graders from Altoona School District, approximately 1,000 ninth-graders from Hazleton School District, and approximately 900 ninth-graders from Williamsport School District.

The questionnaires and standardized tests were given to the sample students at the end of their nineth, tenth, and twelfth grades. After the students left high school, the annual follow-up questionnaires were mailed to them with incentives. Birthday cards were sent to the students yearly to update the mailing addresses. In order to increase the respondent rate, twelve percent of nonrespondents were randomly selected and phone-interviewed.

A number of standardized tests were used in the study, including the General Aptitude Test Battery (GATB), Occupational Values Inventory (OVI), Differential Aptitude Test (DAT), Stanford Achievement Test (SAT), Vocational Development Inventory (VDI), Ohio Vocational Interest Survey (OVIS), Metropolitan Achievement Test (MAT), Occupational Interest Inventory (OII), California Test of Mental Maturity (CTMM), Academic Promise Test (APT), Vocational Preference Inventory (VPI), Scholastic Aptitude Test (SAT), Ohio Trade Achievement Test (OTAT), and the College Entrance Examination Board (CEEB). Questionnaires were designed to obtain information regarding each student's biographical background, hobbies, interests, educational plans, and occupational plans. Postsecondary variables relating to occupational status, educational status, and job satisfaction were also studied.

The study had a definite impact on career guidance in vocational education, providing local school districts, as well as the state, with additional resources. It also gave recognition to vocational education programs in Pennsylvania. The study could serve as a model for future research in other states, and could increase awareness of vocational development.

Fuller, Gerald R., and Winn, John. *Career Development Patterns of Vocational Pupils Graduating or Leaving School, 1967, 1968, 1969, 1970.* Burlington: Department of Vocational Education and Technical Education, Vermont University, February 1975. (ED 112 198)

The purpose of this longitudinal study was to develop a data file beginning with the first year of operation of Vermont Area Vocational Centers. The field test and the follow-ups were designed as a model for collecting data and analyzing the statewide program.

A total of 29 public and private schools were included in this study. The sample included all the graduates and dropouts of those schools which had at least one funded vocational education course during 1967, 1968, 1969, or 1970. There were 3,925 students surveyed in this study.

Two forms were developed to obtain mailing addresses and to collect information regarding students' vocational program and school-leaving status. Both forms were administered by school personnel.

Questionnaires were mailed to the target population. To facilitate the mass mailing process, the same proportion of questionnaires were sent to different proportions of the populations each time. For example, three hundred questionnaires were mailed to different students and their parents five times at two-week intervals. Two follow-ups were also conducted. A total of 1,652 (41 percent) completed the questionnaires; 380 could not be reached due to unavailable addresses. The variables in the questionnaire were related to employment status, reasons for unemployment, additional schooling, job promotion, and salary promotion. Following this initial establishment of a state-wide longitudinal data file, recommendations were made to collect such statewide longitudinal data every three years, or no less than once in five years.

Hawaii University. *Fall 1974 Entering Students at the End of Their Sixth Semester, Fall 1974 Through Spring 1977: Third Report.* Student Flow Project, Report No. 29. Honolulu: Hawaii University, Community College System, November 1977. (ED 145 987)

The objective of this study was to analyze the progress of 7,046 new students and 2,125 transfer students who entered the Hawaii community colleges in the fall of 1974. These students were traced for six semesters from fall of 1974 to spring of 1977. A total of three follow-ups were conducted.

The data were collected from the following categories: continuation rates, full-time rates, credit-completion rates, changes of major, and student status at entry by sex, campus, and program.

The following findings were reported:

1. A total of 22 percent of students and 16 percent of transfer students continued community college through the sixth semester.
2. A total of 13 percent of new students and 15 percent of transfer students graduated from the community college in the sixth semester.
3. Overall, males had higher continuation rates than females each semester, as did vocational education majors compared to other majors.
4. Females had slightly higher credit-completion rates than males in each semester.
5. Vocational students had higher full-time rates and credit-completion rates.
6. In general, stability was noted in sex and program differences, semester after semester, for both new students and transfer students.

Sanborn, Marshal P.; Engles, Dennis W.; Pfleger, Lawrence, R.; and Rodenstein, Judith M. *Career Education for Gifted and Talented Boys and Girls.* Final Report, Madison: Research and Guidance Laboratory for Superior Students, Wisconsin University, June 1976. (ED 148 077)

This is the final report of an eighteen-year longitudinal study of gifted and talented students. Launched in 1957 by the Research and Guidance Laboratory for Superior Students, the major purpose of the study was to promote more widespread use of career education techniques addressed to problems of the gifted and talented. The specific tasks of the study involved development of effective local plans by using specialized procedures, laboratory system, and community resources; stimulation of processes in identifying gifted and talented students; encouragement in planning special provisions; and demonstration of appropriate guidance and career education services for the gifted and talented.

A total of 3,600 gifted and talented boys and girls, their parents, teachers, and counselors from 90 Wisconsin communities were involved in the study. The following materials are included in this report: (1) a resource packet of materials developed to outline principles of planned change; (2) representative case materials excerpted from interviews and accumulative folders of four students; (3) annotated bibliographies of the related studies; (4) a collection of materials for career education of gifted and talented; (5) abstracts of seventy published studies conducted since 1957; and (6) three papers given during workshop sessions related to women's issues.

Horner, James T.; Peterson, Rolland, L.; and Harvill, Leo M. *An Experimental Evaluation of Approaches to Preparing High School Students for Agricultural Occupations Other Than Farming* and *Principles Versus Traditional Approach to Teaching Vocational Agriculture.* Final Report. Lincoln: Nebraska University, June 1969. (ED 035 773)

This study had two major objectives: (1) to evaluate the effects of selected treatment and classification factors on the preparation of high school students for initial entry into agricultural occupations other than farming, and (2) to compare the effectiveness of structuring agricultural subject matter based on the principles approach with the traditional approach.

In 1965 a random sample of 1,200 tenth-graders and 1,016 twelfth-graders from 24 schools in Nebraska were selected for this study. The pre-test was administered in September 1955, and the post-test was held in May 1966. Based on the first pre- and post-tests, the principle approaches were revised. The pre-test was again administered in September 1966, and followed with a post-test in May, 1967 to 1968.

The instruments used for the first pre- and post-tests included the Test of General Information for Prospective Workers, Work Opinion Inventory, Off-farm Agricultural Occupations Opinions Inventory, Job Questionnaire, and Job Description. The second pre- and post-tests instruments were the Test on the Principles of Plant and Animal Science, Test of Principles of Mechanics, Test on Agricultural Management and Marketing Principles, Agricultural Achievement Test I, and California Short-Form Test of Mental Maturity Level V. The follow-up study gathered information concerning employment status, weekly salary, working hours, and job satisfaction.

The three groups were treated with Principles approaches: related instruction, directed work experience, and a combination of related instruction and directed work experience. The fourth group, a control group, was treated with traditional approaches.

Three groups taught by the Principles approaches had higher achievement than the control group. However, no significant differences were found among the three experimental groups. The suggestion was made to further define the dependent variables.

Tomlinson, Robert M.; Cangdon, Lois N.; Huch, John F.; and Hindhede, Lois A. *Background Characteristics and Success of Practical Nursing Applicants, Students, and Graduates, Final Report, Part III.* Urbana: Department of Vocational and Technical Education, University of Illinois; Iowa City: College of Medicine, University of Iowa. September 1971. (ED 058 434)

This report is based on the last part of a three-phased study entitled *An Integrated Longitudinal Study of Practical Nursing.* The purposes of the study were (1) to determine the nature of the population of licensed practical nurses, their employment patterns, employment preferences, the recruitment and selection of students of practical nursing, and the programs through which they are prepared; (2) to determine the relationship among identifiable characteristics of individuals and their employment patterns as practitioners of practical nursing; and (3) to improve nursing services through improvement of the selection process, education program, and better utilization of prepared personnel. The objectives of this Part III report are to examine validity of the licensing examination as an appropriate measure of nursing competence, and to provide educational and research experience for strengthening licensure activity in the health occupation field.

The entire study was based on data obtained from 45 cooperating practical nursing programs in both of the states of Illinois and Iowa. This three-phased study was conducted from 1965 to 1968. The sample was a composite of faculty, dropouts, and graduates of the class of 1965, totaling 3,146. Of 1,350 students enrolled in the criterion class, 1,056 completed the program and graduated with the class in which they started.

Variables of the study included age, migratory characteristics, license status, personal characteristics, employment situations, occupational information and patterns, assignment stability and mobility, geographic location, and occupational history. Specifically, Part III examined (1) students' reasons for not being enrolled in the practical nursing criterion class; (2) students' abilities, interests, maturity, and achievement; and (3) employment preferences and status. Variables relating to students' satisfaction with the program and the faculty were also examined. Data were collected from personal interviews, mailed questionnaires, standardized tests, and school records.

The following findings were reported: (1) there were significant differences among the applicants in Illinois and Iowa; (2) there were a great number of applicants in need of refresher and remedial education services prior to the practical nursing program; (3) most older single and non-white students had difficulty with finances; and (4) further study is needed to develop more appropriate examination methods for licensing. Part I and Part II of the study are in ED 040 229 and ED 040 300.

Wenrich, Ralph C.; Hodges, Lewis H.; Sommerfeld, Donald A.; and Dugan, Charles L. *A Study Program for the Development of Persons for Leadership Roles in the Administration of Local Programs of Vocational and Technical Education.* Final Report. Ann Arbor: Division of Vocational and Technical Education, University of Michigan, August 1968. (ED 026 523)

The purpose of this study was to measure the leadership behaviors of trainees who participated in the Leadership Development Program of an eight-week summer workshop and following year-long internship sponsored by the University of Michigan.

There were seven groups identified in this study. Samples were randomly selected from each group. The experimental groups involved (1) a total of twenty trainees who attended a workshop in the summer of 1964 and a year-long internship in 1964-1965, (2) twenty trainees who attended a year-long internship in 1964-1965, (3) nineteen trainees who attended a workshop in the summer of 1965 and a year-long internship in 1965-1966, and (4) twenty trainees who had a summer workshop in 1966 and a year-long internship in 1966-1967. The control group consisted of three random samples of people who had interviewed for the leadership development program but had not attended sessions.

Initial interview records for application, leadership test, and questionnaires were used for data collection with both groups at the time of their application to the program. Follow-up data were collected in March 1968. Study variables included job status, administrative duties, the vocational-technical role, agent of change, and salary.

The study found that the trainees who participated in the leadership development program improved at a greater rate on the leadership variables than the control groups. The combination of the eight-week summer workshop and the year-long internship proved effective for the trainees.

Wheelock, Gerald C.; Byrd, Taylor, Jr.; and Reddy, Sanath K. *Countering Macro-Structure in the Location of Area Vocational Training Centers: Implications for Emerging Rural Communities.* Normal: Alabama A&M University, February 1978. (ED 151 121)

This study was conducted to determine the degree of success of the Vocational Education Act of 1968 in achieving equitable distribution of vocational education facilities and programs in Alabama. Specifically, the study attempted to explain the appropriateness of locations of the Area Vocational Training Center (AVTC).

A total of 67 counties in Alabama were identified for this study. In five separate years (1970, 1974, 1975, 1976, and 1978), data were continuously collected from each county concerning the state collective criteria and local macro-structure. Variables included school enrollment, percentage of disadvantaged enrollment, percentage of non-white enrollment, employee establishment, and population growth rate from 1960 to 1970 and from 1970 to 1976. Instruments for data collection were not mentioned in this report.

The study findings included (1) the locations of the Area Vocational-Training Center (AVTC) was influenced by schools enrollment; (2) there was a tendency to locate an AVTC in smaller communities with decreasing enrollment; and (3) the percentage of non-white student enrollment exerted a strong influence on the location of the AVTC in 1975-1976. The recommendations were made that state policy makers should understand the cause of the trends observed in this study. Rural industries were suggested to be selectively locating in communities with concentration of low-income labor, thus reinforcing the policy criteria favoring communities with high popualtions of disadvantaged.

Ghazalah, I. A. *Longitudinal Study of Vocational Education Graduates and Utilization of Federal Income Tax Data*. Columbus: The Ohio State University, February 1978.

This longitudinal study was designed to examine the vocational trainees' progress and geographic mobilities by utilizing the federal income tax return data. Sample of the study, a total of 10,731 vocational trainees, were selected from those who took the Ohio Trade and Industrial Education Achievement Test in 1971. The sample was grouped based on sex as well as geographic region where the school is located.

The researcher collected the income tax return information in complete table forms provided by the Internal Revenue Service in both years of 1974 and 1976. The information collected included filing status, adjusted gross income, wages, dividends, interest income, employment status, and geographic mobility.

The results of the study indicated that the trainees who filed 1974 individual income tax returns, their adjusted gross income ranged from $5,940 to $6,806. The highest income was reported in Machine Trades ($7,241), and the lowest was cosmetology ($4,198). The trainees who filed the tax returns were nearly 95 percent of the total sample, which suggested an approximate employment rate. About 85 percent of the trainees retented in their geographic area. The Machine Trades trainees had the highest retention rate (90.6 percent), while the Electricity trainees had the lowest (83.4 percent).

The researchers found that only information from the tax returns filed individually could be utilized. The joint income tax returns were limited in income-related information. The method of manual tabulation was suggested to trace information such as family size, interest payments, house ownership, savings, health expenses, and contributions.

Kersting, James; Emerton, R. Greg; and Golladay, Loy. *A Longitudinal Study of Career Maturity Attitudes in a Deaf Population.* Rochester, New York: National Technical Institute for the Deaf, Rochester institute of Technology, August 1977.

This study was designed to investigate the utility of using the Crites' Career Maturity Inventory (CMIJ) Attitude Scale with hearing-impaired college students. The original CMI Attitude Scale, Form A, contained items with a sixth-grade reading level. Form B was structured with an appropriate reading level for the population of the hearing-impaired students.

The initial sample for the study included 149 students enrolled in the National Technical Institute for the Deaf during the 1973 summer orientation program. Students were randomly assigned to two groups: 74 students in Group 1 completed Form A of CMI; 75 students in Group 2 completed Form B of CMI.

The first follow-up was conducted eight months after the initial testing. Eighty percent of the students were retested and surveyed with a questionnaire. The second follow-up, conducted twenty-two months later, tested and surveyed 45 students. The longitudinal results reported were generated from data collected from the sample of 45 students.

A significant relationship was found to exist between reading ability and CMI scores. Variables such as socioeconomic status, type of high school attended, grade point average in college, and work experiences were not correlated to attitude score. Specific recommendations were made that Form A can be used as a counseling tool in one-to-one situations. However, Form B was proved to be more suitable for use with a hearing-impaired population.

Carroll, Adger B., and Ihnen, Loren A. *Cost and Returns of Technical Education. A Pilot Study.* Raleigh: North Carolina University, July 1966. (ED 015 247)

This longitudinal study attempted to obtain information regarding costs and returns of technical education. The study was designed to compute social and private rates of return on investments in technical education, and compare these with estimates of the rate of return on investments in general education.

The selected samples included 45 whites who graduated from Gaston Technical School in 1959 to 1960, and 45 white male high school graduates having similar characteristics. The study was launched in 1959. The same subjects were followed for seven years.

Data were collected from students' high school records. The variables included students' technical education experience, grade average, socioeconomic status, military experience, migration information, class size, and graduate trends. The major techniques for data analysis was the multiple regression model.

The findings are summarized as follows: The average total cost to society for two years of technical education was $7,425 per student. This included $5,197 for loss in productivity while in school, and $2,228 for costs of school facilities, supplies, and personnel. The average total private cost per student was $4,920. The estimated social rate of return on investments in technical education was 16.5 percent and the private rate was 22 percent. It was assumed that student's income would increase two percent annually.